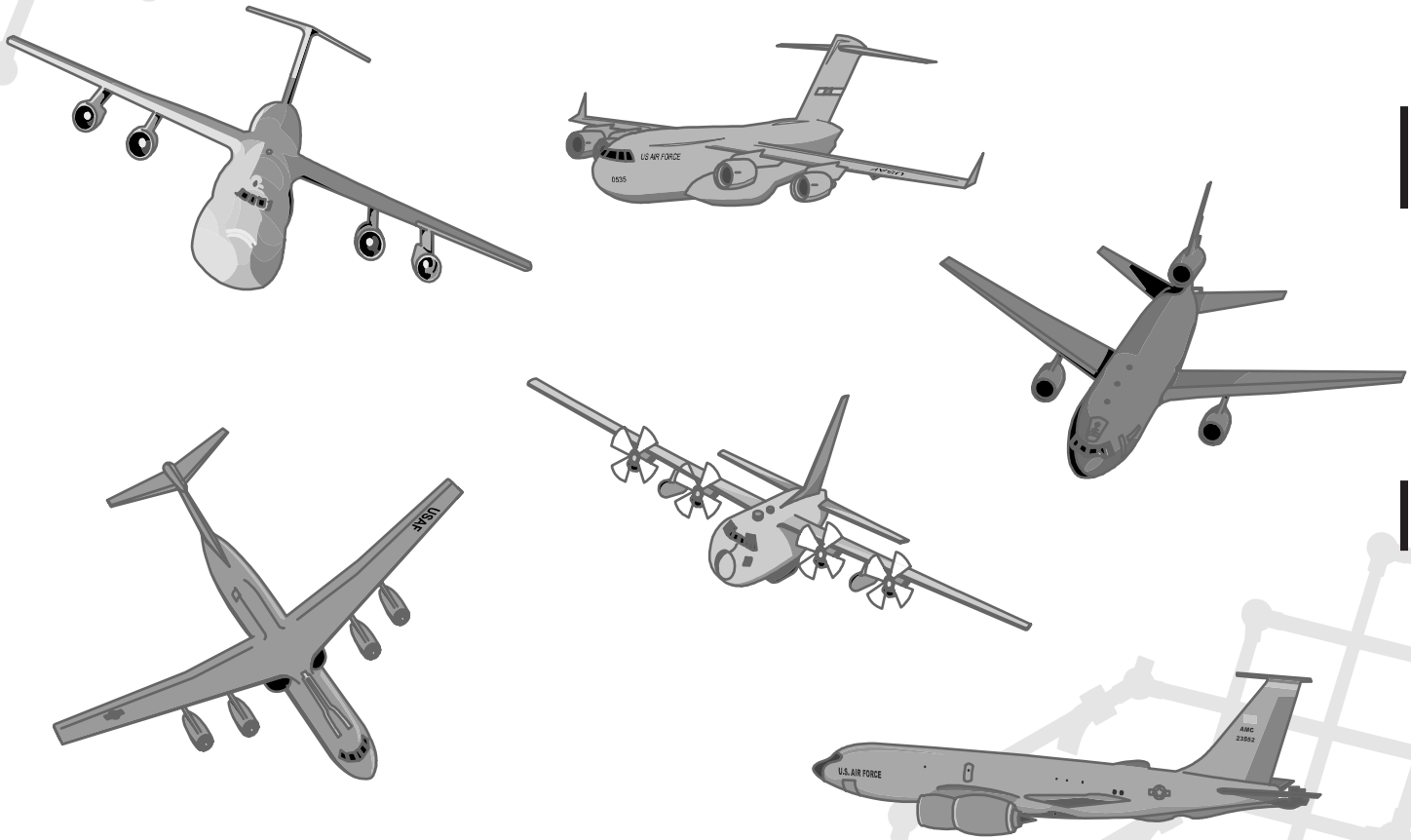
AMC AFFILIATION
WORKBOOK 36-101
VOLUME 1
EQUIPMENT PLANNERS COURSE



AMCP 36-1 has been rescinded and this workbook has been created as a replacement

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Introduction:

AMC AFFILIATION PROGRAM
EQUIPMENT PREPARATION COURSE
PHASE I

Overview: The Equipment Preparation Course is designed to educate personnel on how to properly prepare cargo, equipment, and personnel for airlift on AMC aircraft.

NOTE: To attend Phase II training, students must have successfully completed Phase I training. (Exception: Air Combat Command affiliated units are exempt from Phase I training provided students attend a host-base equipment preparation course and material covered meets affiliation training Phase I requirements).

Phase I - AMC Affiliation Workbook 36-101 Volume 1 - *(Equipment Preparation)*
This training is designed to educate personnel (E-4 and below) in the mechanics of preparing cargo, equipment, and personnel for cargo aircraft loading. The course consists of 16 hours (2 days) of academic instruction. Although this course is designed for individuals (E-4 and below) who will actually prepare, load, and tie down unit equipment, any unit individual may attend. All class members will be expected to participate in the total preparation and loading exercise.

Equipment preparation: includes general and specific supported force responsibilities, marshaling, joint inspection, palletization, materiel handling equipment (MHE), shoring requirements, and weighing and marking cargo.

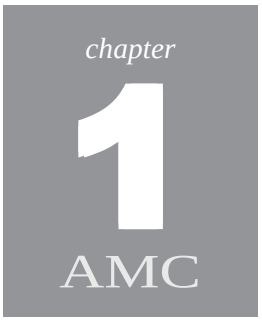
Safety: emphasizes the aspects of airlift mobility that are essential to efficient mission accomplishment.

Phase II - AMC Affiliation Workbook 36-101 Volume II - *(Airlift Planner's Course)*
This training is designed to educate unit movement officers and supervisory personnel (E-5 or above) in airlift planning and execution of joint combat airlift operations. Individuals not fitting within the rank structure may be admitted by submitting written verification from their commander indicating they are active participants in the load planning phase of airlift operations. Personnel attending this course must have a minimum retainability in the logistics duty position of one year.

Principles of load planning: (Phase II) consists of aircraft weight and balance, load planning principles, aircraft characteristics, and manifesting. The course consists of 48 hours (6 days) of training. Upon successful course completion, personnel will receive certification via AMC Form 9, Airlift Load Plan Certification with either PDS Code 9N1 (USAF) and M9T (USMC). Graduates of Phase II will be certified as an aircraft load planner with certification valid for 24 months. The AF Form 1256 and the AMC Form 9 will serve as source document.

NOTE: This publication is written as a classroom aid. It is **non-directive** in nature and is not to be used as an official reference for mobility planning or execution.

AIRLIFT MOVEMENT



Lesson Objective: The objective of this lesson is for each student to know the events that led to the evolution of airlift.

References: DOD 4500.9-R Defense Transportation Regulation Part III, Mobility (DTR)

Web Pages: http://214.3.17.158/J4/j4lt/dtr.html (DTR)

Learning Activities:

1. History of airlift movement
2. Modern combat airlift
3. Types of Operations

Test Objectives:

1. Outline the history and purpose of airlift
2. Define inter/intra theater movements
3. List the Airlift type aircraft in the Air Force inventory

AIRLIFT MOVEMENT

1.1. Historical Development of Air Movement. Knowledge of the past aids in the understanding of the present. Although the history of air movement is comparatively short, it, no less, is colorful and interesting. Observation was a primary use of early air power. As early as the Civil War, balloons were used to detect troop movements. Airlift began in 1918 when Brigadier General Billy Mitchell proposed using parachute infantry troops dropped behind German lines. Infantry troops were already in training for the mission when World War I ended. After World War I, airlift training was suspended until 1928 when United States Army enlisted personnel staged successful parachute drops in Texas. Military officers from other countries witnessed these drops. Russia, Great Britain, and Germany realized the military potential of the parachutist and air movement, in general. In 1935, Russia moved a division by air from Moscow to Vladivostok, a distance of over 4,000 miles, a difficult feat even today. In 1936, over 15,000 troops parachuted and airlanded in airborne maneuvers near Kiev.

1.1.1. Airlift has played an important part in nearly every major conflict since World War I. Throughout World War II and in all theaters of operation, commanders frequently airlifted troops and supplies. The Berlin Airlift was the first real test of airlift operations in a non-combat role. Without airlift, the Soviet Union would have been able to starve Berlin into submission. During the Korean conflict airlift was used to deploy and re-supply UN forces by airland and airdrop.

1.1.2. During the Vietnam War, our modern airlift force was developed. Battlefield commanders recognized the advantages of airlift in the early stages of the conflict. During the Vietnam era, modern, quicker, and more efficient airlift aircraft replaced earlier models. Early in the Vietnam War, it took days to transport a few thousand pounds of cargo from the United States to the battle area. By the end of the war, we had the capability to transport over 200,000 pounds the same distance with one airplane in less than 24 hours.

1.1.3. In 1973, this capability was put to the test in the Yom Kippur War. After deciding to support Israel, the first C-5 required only hours to arrive at Lod Airport in Tel Aviv with critical re-supply items. Airlift provided the needed material quickly enough to help decide the outcome of the war.

1.1.4. In more recent times, airlift was used in less traditional roles, although just as effectively. The Israelis used airlift to rescue hostages from captivity at the Entebbe Airport in Uganda. The United States used airlift almost exclusively to deliver forces to rescue the students and halt communist aggression in the island nation of Grenada. Likewise, during Operation JUST CAUSE, the protection of American lives and the capturing of Manuel Noriega, the self-proclaimed dictator of Panama, was entirely supported by forces inserted by airlift. Starting in August 1990, AMC aircraft became involved in Operation DESERT SHIELD. Throughout the Gulf War, AMC aircraft provided the mobility necessary to create a quick and decisive coalition victory.

AIRLIFT MOVEMENT

1.1.5. Airlift has played a key role in many humanitarian operations. The rapid removal of bodies from the Jonestown, Guyana, massacre and the return of our hostages from Iran and Beirut are such examples. These and many other operations prove the worth of airlift. Now much of our defense strategy is centered on airlift's rapid response capabilities.

1.2. Modern Combat Airlift. Modern combat airlift is continually undergoing development and the methodology of inter-theater and intra-theater operations is constantly under revision. The viability of combat airlift is tested during every Joint Chiefs of Staff (JCS) directed exercise. AMC's capability to respond, as well as the response capability of the units requiring AMC airlift, has been proven effective. However, this does not mean we can relax. Personnel attrition and ever changing equipment requirements dictate a continuing need for training and exercises.

1.2.1. Inter-theater operations. A military operation between two theaters (i.e., an operation between the continental United States (CONUS) and outside the continental United States (OCONUS) theaters. Inter-theater operations are sometimes also referred to as "strategic" operations. The military aircraft that support inter-theater operations are the C-141B, C-17, C-5, C-130 (primarily used for intra-theater operations), KC-10 and the KC-135.

1.2.2. Intra-theater operations. A military operations within a specific theater. Intra-theater operations are also referred to as "tactical" operations. The military aircraft that support intra-theater operations are the C-130, C-141 and the C-17.

1.3. Airlift Aircraft Inventory. The primary AMC airlift aircraft inventory consists of five aircraft; the C-130 Hercules, the C-5 Galaxy, C-17 Globemaster III, C-141B Starlifter, and the KC-10 Extender. The KC-135 Stratotanker provides additional cargo airlift capability. These aircraft capabilities and limitations are fully described in AMC Affiliation Workbook 36-101 Vol. II.

AIRLIFT MOVEMENT

Introduction and Chapter 1— Homework Assignment

1. The Equipment Preparation Course is designed to educate personnel on how to _____ _____ _____, equipment, and _____ for airlift on AMC aircraft.

2. Airlift Planner's Course: This training is designed to educate _____ _____ _____ and _____ _____ (E-5 or above) in airlift planning and execution of joint combat airlift operations.

3. Airlift played an important part in nearly every _____ _____ since World War I.

4. The military aircraft that support intra-theater operations are the _____, _____, and the _____.

5. The primary AMC airlift aircraft inventory consists of five aircraft; the _____ Hercules, the _____ Galaxy, _____ Globemaster III, _____ Starlifter, and the _____ Extender. The KC-135 Stratotanker provides additional cargo airlift capability.

DEPLOYING UNIT RESPONSIBILITIES

chapter
2
AMC

Lesson Objective: The objective of this lesson is for each student to know the roles and responsibilities of the members and sections responsible for helping their units deploy.

References: DOD 4500.9-R Defense Transportation Regulation Part III, Mobility (DTR)

Web Pages:

Learning Activities:
1. Deployment responsibilities
2. Planning and preparation
3. Troop commander
4. Prohibited item briefing
5. Cargo custodian

Test Objectives:
1. Identify the roles of the personnel responsible for helping your unit deploy
2. List the responsibilities of troop commanders and cargo custodians
3. Match the responsibilities to the appropriate people involved in the deployment process

DEPLOYING UNIT RESPONSIBILITIES

2.1. Deployment Responsibilities. A TALCE will normally be available to support most airlift contingencies. However, circumstances could dictate that units accomplish all cargo preparation and aircraft loading. A self-supporting unit moves quickly and incurs fewer problems than the unit that relies heavily on AMC support. The finest combat units are of little value if they can't get to the area where their talents and capabilities are needed. To help with this, we will discuss some responsibilities from the two phases of Deployment Operations. The two phases are 1) the Planning and Preparation phase and 2) the Execution phase. Some of the general deployment responsibilities are below: Further guidance for each phase is provided in DOD 4500.9-R Defense Transportation Regulation Part III, Mobility (DTR).

2.2. Planning and Preparation. Movement of units by airlift demands extensive advance planning on the part of the unit being moved. A primary objective must be to minimize the time a unit being moved is non-operational. Planning is required for the grouping of personnel and material into the most effective loads, the orderly movement to and from unit areas, and for the efficient management of the loading and off-loading of aircraft. Planning, supervising, and controlling of operations are accomplished by mobility forces, A/DACGs (Arrival / Departure Airfield Control Group) and deploying organizations. Here are some of the deploying unit responsibilities.

2.2.1. During initial planning, deployment planners and/or deploying units will determine pre-airlift information required to meet mission requirements.

1) Identify the type, quantity, and dimensions of cargo, equipment, and personnel to be moved.
    a. High Cube / Low Cube
        High Cube – Any pallet that exceeds the parameters a low cube pallet.
        Low Cube – Pallets that will fit on the aircraft ramps. These are pallets less than 76 inches high or lighter than 4664 pounds.
    b. Types of Cargo (Bulk, Oversize, Outsized).
2) Prioritize and Sequence cargo, equipment, and personnel.
3) Identify secondary loads for cargo carrying vehicles and trailers.
4) Identify hazardous or sensitive equipment, which requires special preparation or handling.
5) Identify type and number of aircraft needed to facilitate the move.

2.2.2. Establish liaison with the supporting mobility force (which could be the TALCE).

2.2.3. Attend and participate in joint planning conferences. This assures your unit's airlift needs are identified and planned for, prior to participating in known operations.

2.2.4. Organize, staff, and man the Mobility Control Center (MCC) and the Arrival / Departure Airfield Control Group (A/DACG) (as required by applicable publications).

2.2.5. As a minimum, the following must be accomplished prior to cargo being accepted aboard AMC aircraft.

DEPLOYING UNIT RESPONSIBILITIES

1) Clean and inspect all cargo and equipment.
2) Weigh and Mark all cargo and equipment.
3) Prepare and finalize specific aircraft loadplans.
4) Prepare packing list for secondary loads in vehicles and trailers.
5) Document and manifest all troops and cargo intended for air shipment IAW DOD 4500.9-R-Part II Cargo Movement.
6) Prepare and certify hazardous materials IAW AFMAN 24-204 or equivalent service manual.
7) Provide resources to facilitate upload of aircraft at APOE (Aerial Port of Embarkation), download of aircraft at APOD (Aerial Port of Debarkation), and movement of cargo to and from the Unit Area.
    a) Provide personnel for load teams to load, off-load, and tie down of cargo and vehicles under the supervision of the TALCE personnel or Aircraft Loadmaster/Boom Operator.
    b) Shoring and Dunnage.
    c) 463L Materials Handling Equipment (MHE).
    d) Pusher vehicles with front mounted pintle hooks.
    e) Escorts and vehicles to accompany cargo loads to and from the aircraft for onload and offload.

2.2.6. Appoint a Troop Commander and Cargo Custodians. Some of the duties of the Troop Commander and the Cargo Custodians are discussed below.

2.2.6.1. **Troop Commander Duties.**

1) Brief passengers on availability of flight insurance.
2) Be present at the passenger briefing for the flight.
3) Check all passengers for unauthorized materials which could present a flight hazard, e.g., ammunition, lithium batteries, fuel, etc.
   NOTE: Recommend establishing an amnesty box in the marshalling or alert holding area.
4) Assume control of all passengers listed for movement on the flight and make sure all are informed of formations, expected departure, and reporting time.
5) Be readily available to the DACG at all times. Personnel will not be dismissed without the approval of the DACG.
6) Perform a personnel roll call prior to loading to ensure everyone is present for the flight. Report no-show passengers to the DACG so manifest can be corrected.
   NOTE: Coordinate time of roll call with DACG.
7) Ensure personnel have placed their baggage on the proper vehicle or 463L pallet for movement to the aircraft.
8) Load passengers under the supervision and guidance of the loadmaster. Ensure each individual appearing on the manifest boards the aircraft. Maintain planeload or troop commander's itinerary as shown in figure 2-1. The itinerary may be in narrative form or any form the planeload or troop commander deems appropriate. Provide complete itinerary to AACG upon arrival at destination or return to DACG via chain of command.

DEPLOYING UNIT RESPONSIBILITIES

9) Brief all passengers on maintaining security of their personal belongings. If a passenger is removed from the flight, ensure the passenger's baggage is also removed. Conduct anti-hijack inspection of all assigned troops and certify completion of inspection in block 6 of DD Form 2131 (Passenger Manifest) or automated manifest. Keep one copy of manifest for deploying unit's records and give two copies to the DACG.
10) Collect all weapons magazines (if not empty) and unsecured/non-palletized ammunition before the anti-hijack briefing. (figure 2-2). On arrival at the aircraft, troop commander must brief the loadmaster on ammunition and assist the loadmaster, as directed, in the tie-down before departing. Munitions will be redistributed on arrival at destination. A "Shippers Declaration for Dangerous Goods" is not required.
11) Maintain in-flight discipline of all passengers.
12) If in-flight rations are issued, control the issue to troops.
13) Help maintain cleanliness and safety in the aircraft.
14) At en route stations, determine ground time from the loadmaster and ensure all passengers are present to meet flight departure times. Know which passengers will be offloaded should it become necessary to take such action at an en route station. Before departure from the en route station, conduct another anti-hijack inspection.
15) Brief passengers regarding local restrictions and conduct at en route stops.
16) Coordinate for billeting and food at en route stations for personnel. Service Memorandum of Understandings (MOU's) requires installations to provide these services on a reimbursable basis.
17) During en route servicing stops, designate a guard for personal effects or other equipment that must remain with the aircraft. Coordinate feeding of security personnel. Arrange for security coverage through base facilities when unusually long delays are encountered.
18) Ensure awareness of composition of and location of hazardous material on aircraft, if any.
19) Upon arrival at destination, maintain control of the passengers and assist with offloading baggage and/or cargo, as required.
20) If the troop commander has authorized troops to hand-carry weapons (including knives and knife-like items) aboard the aircraft, ensure a final walk-through of the aircraft is completed after all passengers have deplaned to retrieve any weapons that may have been left behind.

DEPLOYING UNIT RESPONSIBILITIES

PLANELOAD / TROOP COMMANDER'S ITINERARY

Passenger Briefing.

- Person performing briefing.
- Location of briefing.
- Date and time.

Passenger Loading.

- Aircraft model and number.
- Manifest number.
- Number of passengers loaded.

Aircraft Itinerary.

- Aircraft departure date and time.
- Airport departed from.
- First stop en route.
- Date and time of first stop.
- Date and time aircraft departed from first stop.
- When and where the aircraft arrived and departed at any other stops.
- When and where passengers were off-loaded and reloaded en route.
- Delays en route.
- Reasons for delays en route.

Signature of the planeload or troop commander including rank, social security number, and unit.

NOTE: All times should be "ZULU" times.

Figure 2.1. Sample Planeload/Troop Commander's Itinerary.

DEPLOYING UNIT RESPONSIBILITIES
PROHIBITED ITEM BRIEFING

(Applies only to personal, non-government property)

1. You may not take any of the following items under any circumstances:
    a. Shotguns with barrels under 18 inches long
    b. Rifles with barrels under 16 inches long
    c. Automatic weapons
    d. Switchblade knives
    e. Brass knuckles
    f. Incendiary devices, e.g., flares
    g. Tear gas or mace
    h. Gunpowder, cartridges, or primers
    i. Other hazardous materials e.g. butane fuel canisters
2. If directed by the Operations Plan (OPLAN) or Operations Order (OPORD) (unless otherwise restricted by foreign government regulations), you may ship unloaded, government weapons in checked baggage. It is a federal crime to carry any unauthorized weapon, explosive device, or hazardous materials on board the plane. Knives, knife-like items and devices, which include a knife, will be placed in checked baggage. If you have a weapon or explosive device, declare it now. Tell us now if you have an authorized weapon in your baggage so we can take custody and make sure it is guarded while loaded on the aircraft. Weapons count against your authorized weight allowance.
3. You may ship ammunition in checked baggage, provided it does not exceed .475 caliber and is packaged as outlined in AFMAN 24-204/TM 38-250/MCO P4030.19F/NAVSUP Pub 505(Rev)/DSAM 4145.3. Ammunition also counts against your authorized weight allowance.
4. Flashbulbs are prohibited in checked baggage, but may be hand carried. You may hand carry a camera, but flash attachments of any type, i.e., bulbs, cubes, strobe, etc., cannot be used on the airplane. Aircraft loadmaster, boom operator, and/or flight attendants will provide specific instructions on use of electronic, battery-operated equipment onboard aircraft.
5. Ration heaters may never be opened or used to heat MRE's during flight.
6. You cannot ship alcoholic beverages in checked baggage, but may hand carry up to one (1) U.S. gallon of these beverages, unless the Department of Defense Foreign Clearance Guide states otherwise. It does not matter if the container has been opened, but you cannot drink these beverages on the airplane. Individuals who are obviously intoxicated will not be allowed on board. If you intend to carry alcoholic beverages, you must comply with all foreign, federal, state, and local laws, regulations, and status-of-forces agreements.
7. You may not ship or carry illegal drugs, hallucinogens, or other items prohibited by U.S. Customs regulations.

Figure 2.2. Sample Prohibited Item Briefing

DEPLOYING UNIT RESPONSIBILITIES

2.2.6.2. **Cargo Custodians.** Two cargo custodians for each aircraft should be appointed and briefed by the moving unit. They must be identified on a passenger manifest and will be briefed on their responsibilities for controlling and safeguarding cargo en route. They will be furnished a copy of all of the information necessary to accomplish their duties. The following is an example of a briefing:

Cargo Custodian Briefing

You have been selected as cargo custodian for this aircraft load of cargo, an action necessary for its proper control and safeguarding during airlift. If any cargo is offloaded at an en route stop, prompt execution of assigned duties will reduce confusion. Your duties are:

- Before departure, obtain copies of the cargo manifest.
- Familiarize yourself with the properties of any hazardous material aboard the aircraft. Be prepared to assist the flight crew in cargo-related emergencies.
- When the aircraft lands, make the necessary arrangements to ensure that the cargo is protected.
- Familiarize yourself with the priority of the cargo on board. In the event of offload en route, advise the aircraft commander, loadmaster, or transportation representative of the priority of the cargo to be offloaded.
- If any portion of the cargo is offloaded at an en route base, one custodian will remain with that cargo. One custodian will remain with the aircraft (or as directed by the mobility officer). Give all pertinent information to the proper commander at the onload base and at final destination.
- Upon arrival at the forward operating base or destination, the senior cargo custodian will deliver the cargo manifest to the property custodian according to unit instructions.
- Further duties are explained in DOD 4500.9-R Defense Transportation Regulation Part III, Mobility (DTR).

DEPLOYING UNIT RESPONSIBILITIES

Chapter 2—Homework Assignment

1. A _____-supporting unit moves quickly and incurs _____ _____ than the unit that relies heavily on AMC support. The finest combat units are of little value if they can't get to the area where their talents and capabilities are needed.

2. Troop Commander Duties: Conduct _____-_____ inspection of all assigned troops and _____ completion of inspection in block 6 of DD Form _____ or automated manifest.

3. Unless otherwise restricted by foreign government regulations, you may ship unloaded, _____ weapons in checked baggage. It is a _____ _____ to carry any unauthorized weapon or explosive device on board the plane.

4. _____ cargo custodians for each aircraft should be appointed and briefed by the moving unit.

5. If any portion of the cargo is _____ at an ___ _____ base, one custodian will remain with that cargo.

PALLETIZATION

chapter
3
AMC

Lesson Objective: The objective of this lesson is for students to comprehend how to properly prepare cargo for movement in the 463L system.

References: AMCI 24-101 Vol. 11, Transportation, Cargo and Mail
DOD 4500.9-R Defense Transportation Regulation Part III, Mobility (DTR)

Web Pages: http://web1.whs.osd.mil/forms/DD2775.PDF (DD Form 2775, Pallet ID)

Learning Activities:

1. 463L System
2. Pallets
3. Pallet build-up
4. Married pallets
5. Tiedown Techniques

Test Objectives:

1. Describe the various systems used to facilitate the movement of cargo
2. Explain the characteristics that make up the 463L pallet and nets
3. Describe the proper procedures for storing and handling 463L pallets and nets
4. Give examples on proper pallet build up procedures

PALLETIZATION

3.1. 463L System. In 1957, the USAF adopted a standardized system to facilitate the rapid movement of general cargo aboard airlift aircraft. This 463L system encompasses all aspects of cargo loading. This includes materials handling equipment, cargo loading platforms, restraint equipment, and in-aircraft systems. The 463L system is the Air Force standard for movement of cargo. The system is extremely efficient and can reduce ground times by as much as 75 percent. Your first encounter with the 463L system will probably be the 463L cargo pallet. This chapter explains how to build, use, transport, and care for these pallets.

3.2. Dual-Rail System. The dual rail system is permanently installed in all airlift/463L capable military aircraft with the exception of the KC-135. The KC-135 can be fitted with the dual rail system but the roller system must be requested prior to the aircraft leaving home station. This dual rail system consists of rows of rollers that allow easy movement of the palletized cargo into the aircraft. Many of these rollers are stowable to convert the cargo deck to a flat, clear loading surface for wheeled cargo. The side rails guide the pallets into the aircraft and provide lateral and vertical restraint. These rails have detent locks that prevent forward and aft movement of pallets during flight.

3.3. Pallets. The 463L cargo pallet is made of corrosion resistant aluminum with a soft wood core framed on all sides by aluminum rails (figure 3.1). The rails have 22 steel tie down rings attached in such a manner that six rings are on each long side and five rings are on each short side. The rails also have indents (notches) which are designed to accept the detent locks. These locks are located on numerous types of materials handling equipment and are found on board all airlift capable aircraft. The overall dimensions of the 463L pallet are 88 inches by 108 inches by 2 ¼-inch thick. However, the usable dimensions of the upper surface are 84 inches by 104 inches. This allows for 2 inches around the periphery of the pallet to attach straps, nets, or other restraint devices. An empty 463L pallet weighs 290 pounds (355 pounds with nets) and has a maximum cargo carrying capacity of 10,000 pounds when using nets. The desired load capacity is 7,500 pounds to prolong pallet life. Numerous pallets weighing less than 7,500 pounds may be wasting valuable aircraft ACL (Allowable Cabin Load) and limited space. Pallet is restricted to 250 P.S.I. limitation.

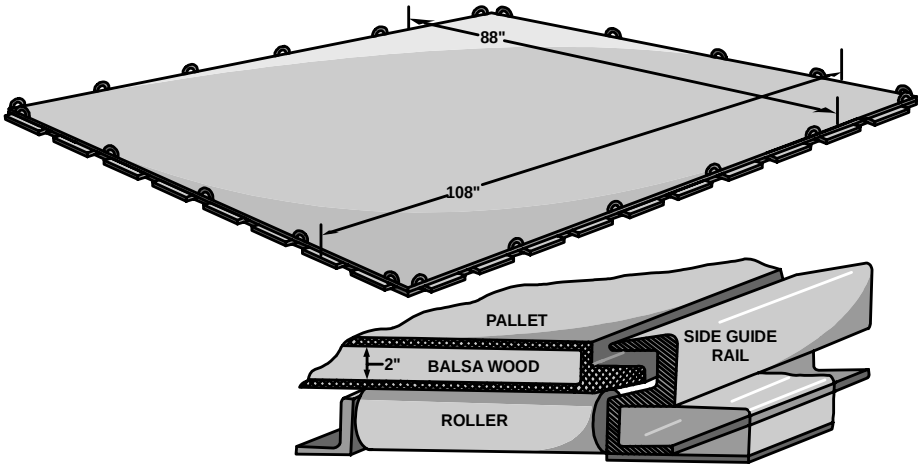


Figure 3.1. 463L Pallet Construction

PALLETIZATION

3.4. Pallet Nets.

3.4.1. There are three nets to a set; two side nets and one top net (figures 3.2 and 3.3). The side nets are green (normally) in color and the top net is yellow (normally). The side nets attach to the rings of the 463L pallet and the top net attaches by hooks to the side nets. These nets have multiple adjustment points and may be tightened to conform snugly to most loads. A complete set of 463L nets will provide adequate restraint for 10,000 pounds of cargo when properly attached to a 463L pallet, with height not exceeding 96 inches above the surface of the pallet. The 463L nets will also provide adequate restraint for 8,000 pounds of cargo with heights above 96 inches (not to exceed 100 inches) above the surface of the pallet. A complete set of 463L nets (2 side nets and 1 top net) weighs 65 pounds.

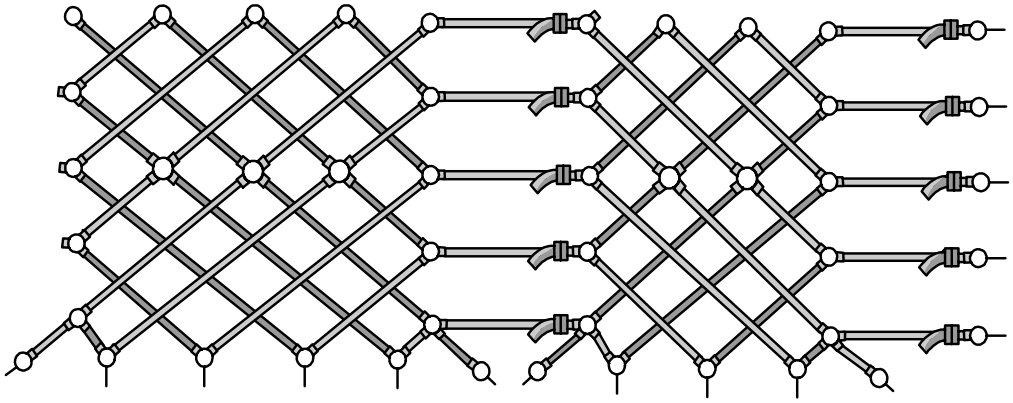


Fig. 3.2. 463L Side Net (Normally Colored Green)

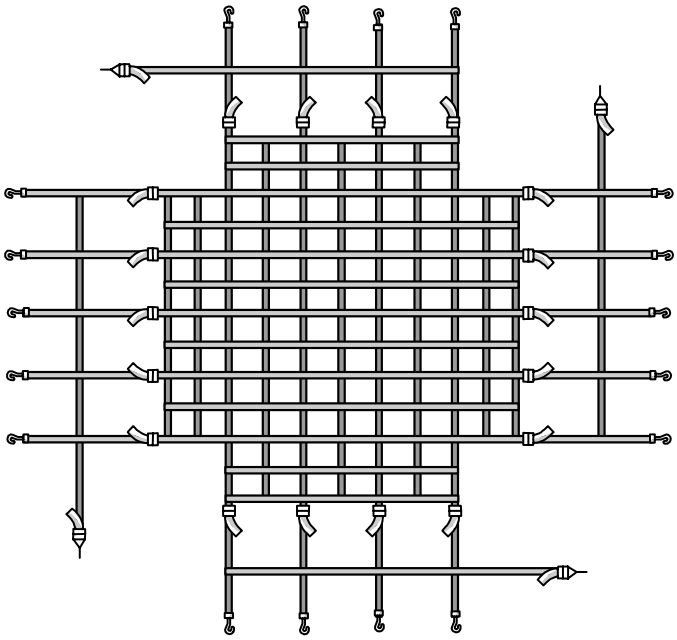


Figure 3.3. 463L Top Net (Normally Colored Yellow)

PALLETIZATION

3.4.2. If items of cargo are not tall enough for the installation of the complete net set, two other options are available:

3.4.2.1. Side nets and seven straps. The side nets can be used with seven straps instead of the top net if the cargo isn't tall enough to properly secure the top net to the side nets. Four on the long side (108") and three on the short side (88"), hooked to the highest side net ring possible. This configuration of straps cinches the side nets up and provides vertical restraint for the cargo. The seven-strap option can restrain 10,000 lbs. of cargo to a 463L pallet.

3.4.2.2. Top net only. The top net can provide adequate restraint for low profile items of cargo (up to 45" tall) weighing up to 2,500 lbs. Items taller than 45" or weighing more than 2,500 lbs. require supplemental left, right, forward and aft restraint.

3.5. Storage and Handling. The 463L pallets and nets are expensive to purchase and refurbish. With reasonable care and protection, they should last almost indefinitely. The procedures to care for these pallets and nets are simple. Always follow these guidelines:

3.5.1. Dunnage. Always put adequate dunnage under 463L pallets. (Fig. 3.4.) This will aid in the movement of the pallets and protect the lower surface from damage. Dunnage is normally lumber or timbers placed under 463L pallets to prevent damage to the lower pallet surface and to aid in transportation with a forklift. The minimum dimensions of each piece of dunnage are 4" X 4" X 88" long. Use three pieces to support each loaded 463L pallet while on the ground. Just about any kind of material can be used as dunnage. However, wood is the cheapest and most readily available type.

NOTE: All pallets are required to be shipped with dunnage. This is required for both deployment and redeployment and **must be provided by the user.**

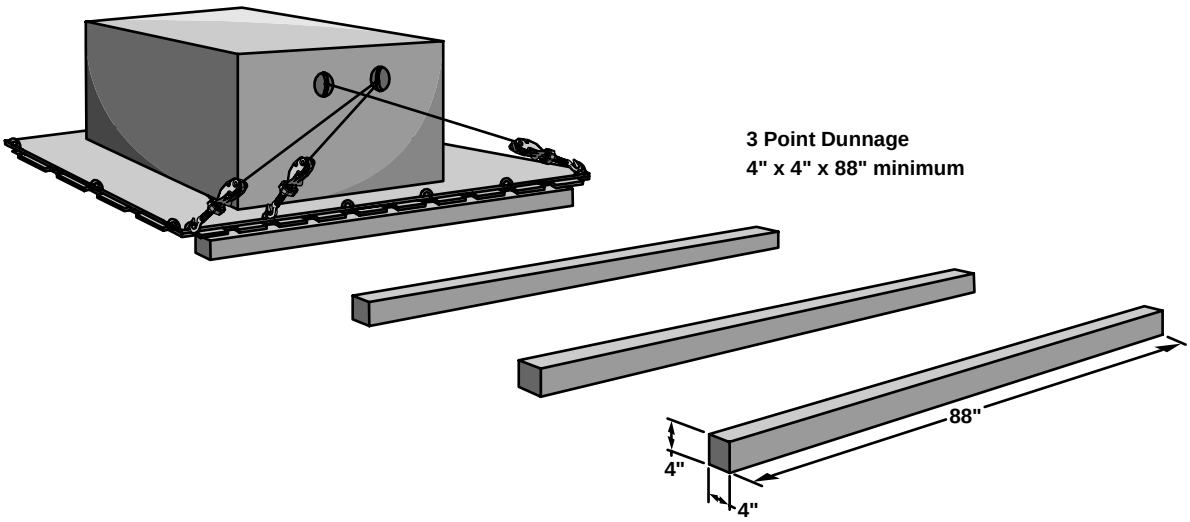


Figure 3.4. Dunnage

PALLETIZATION

3.5.2. Empty pallets may be stacked 20 high (above a base pallet) for air shipment (except the KC-10, which is limited by concentrated cargo limitations). Only a single stack of 20 pallets or less, properly restrained by 463L nets, may be transported by air. Place three pieces of dunnage between the base pallet and the first pallet of the stack. The minimum thickness of the dunnage must be 4-inches to afford access for forklift tines. This also provides clearance for the aircraft dual-rail system. Stacks of empty pallets up to 50 high are authorized for unit, APOE, and APOD storage areas, provided they are properly supported (3 pieces of dunnage, normally between stacks of 10). Never stack empty pallets upside down. This could damage the rings or the aluminum skinned surface.

3.5.3. Always protect the upper surface of the pallet from sharp edged cargo. If the cargo has any sharp edges or protrusions, place adequate shoring or cushioning materials between the cargo and the pallet.

3.5.4. Be careful when transporting 463L pallets with a forklift. The tine tips can easily damage the pallet surface making it unusable.

3.5.5. Never push or slide 463L pallets across any solid surface. To do so will cause damage to the skin.

3.5.6. Protect nets from adverse weather conditions. The netting materials will mildew and deteriorate. The metal hooks will also rust if not properly cared for. Hang and dry all nets after use. Never pile wet nets together for storage.

3.6. Inspection. Inspect pallets and nets to ensure serviceability. Do not use pallets if the aluminum skin is separating or punctured. The skin-to-rail bond is an important portion of the pallet's strength. You may use pallets with minor dents, gouges, and scratches that do not fracture the skin. For more extensive damage (such as bent rails or damaged/missing tiedown rings), the pallet will not be accepted for air shipment. It must be sent to depot for repairs. Keep pallets as clean as possible to protect the cargo and prevent the spread of insects, dirt born infestations, etc.

3.7. Pallet Build-up. Palletize cargo from the heaviest to the lightest items. Distribute large and heavy objects evenly from the center of the pallet outward. This will prevent the pallet from becoming heavy on one end (figure 3.5). This also helps to maintain the center of balance at or near the center. Place lighter and/or smaller items on top or along the side of the heavier cargo (figure 3.6). Containers marked "this side up" must be placed upright and cargo with special labels, should have the labels facing outward. Construct the load in a square or pyramid shape when possible (figures 3.7 and 3.8). Do not allow cargo to extend beyond the vertical stacking line (84 by 104 inches) of single pallets. This makes the load stable, easy to handle, easy to secure to the pallet, and prevents binding in the aircraft 463L dual rail system. Hazardous materials must be placed on the pallet with the label clearly visible and never buried or hidden. Hazardous items must be accessible in flight in case of leakage.

PALLETIZATION

NOTE: Each aircraft has size and shape restrictions that must be considered. For example, aisleways are required on pallets destined for pallet positions three and four in a C-130 aircraft. Check the particular requirements of the aircraft for which the load is prepared.

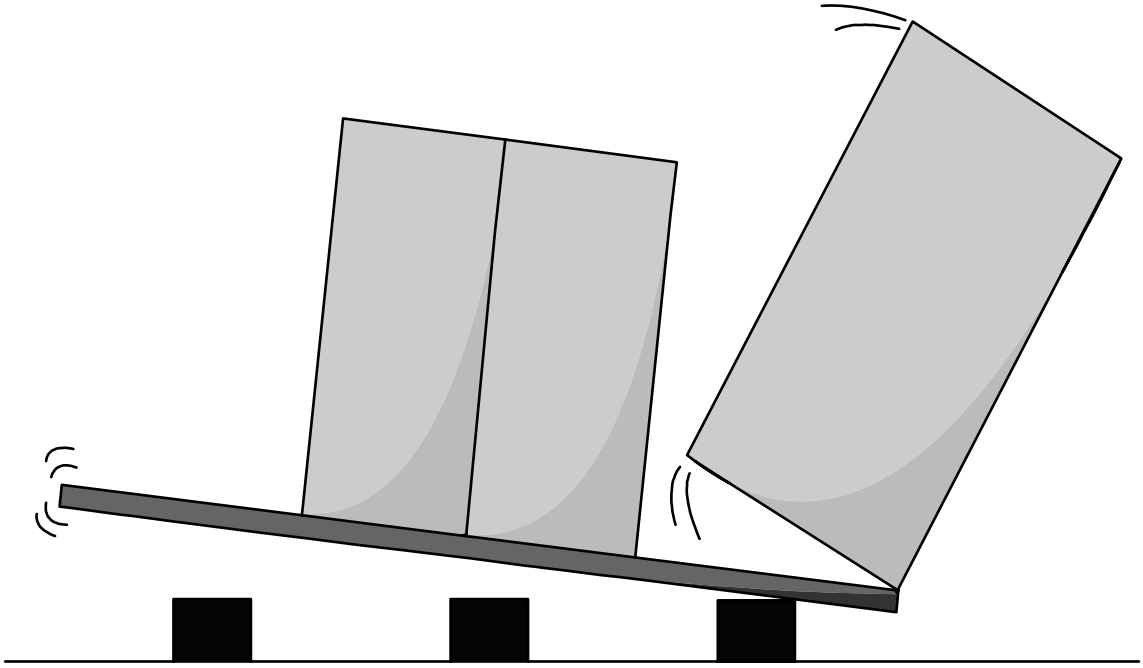


Figure 3.5. Heavy Ended Pallet

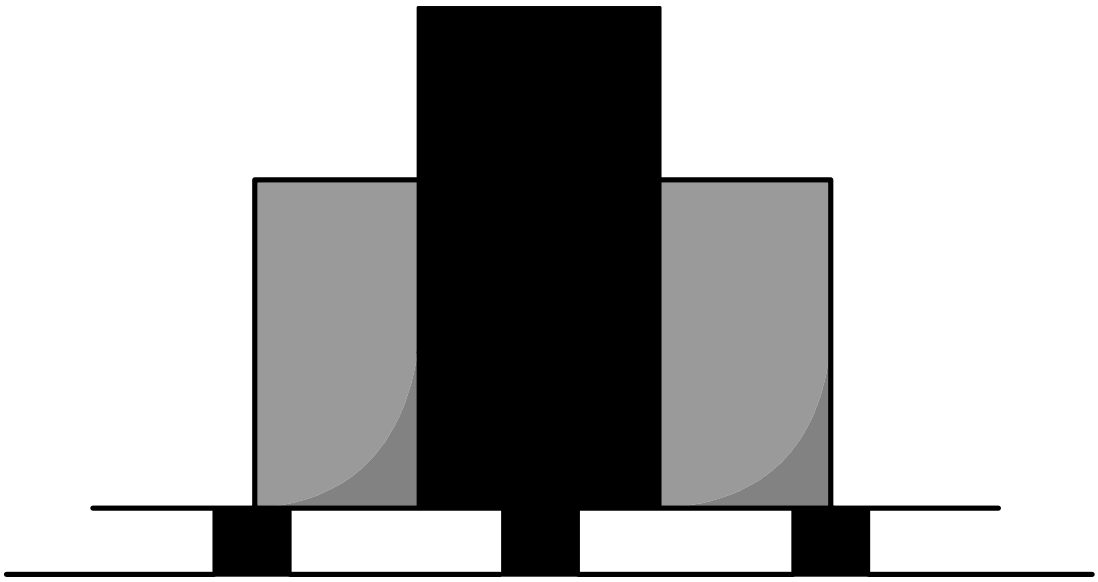


Figure 3.6. 463L Pallet Cargo Placement

PALLETIZATION

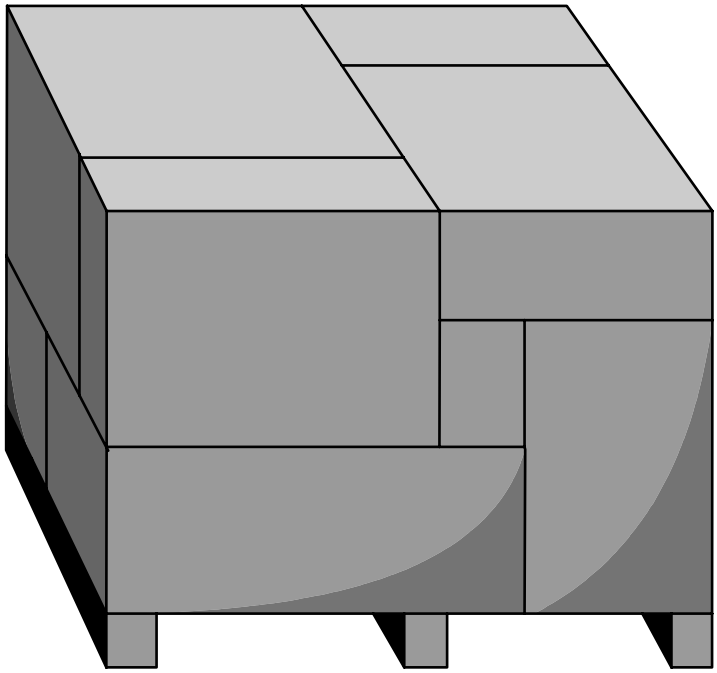


Figure 3.7. 463L Pallet Cargo Placement (Square)

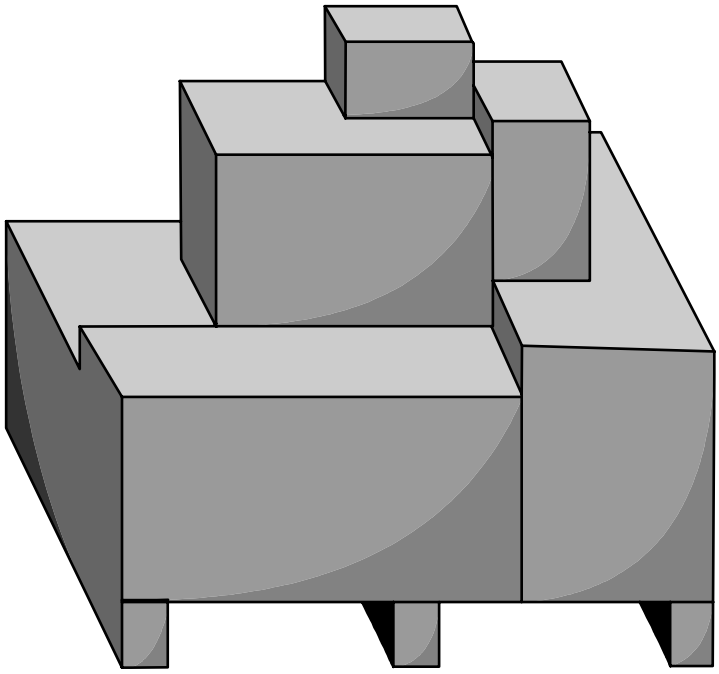


Figure 3.8. 463L Pallet Cargo Placement (Pyramid)

PALLETIZATION

Pallet Build-up Procedures Checklist.

1. Are you prepared to follow good safety practices?
   a. Do personnel have steel toed safety shoes and work gloves?
   b. Have personnel been briefed on proper lifting techniques?
2. Is the pallet skin free of damage, top and bottom, and any bent lips on the pallet perimeter?
3. Are tie down rings serviceable?
4. Is the pallet level and not warped?
5. Is the pallet free of corrosion?
6. Is the pallet clean and free of dirt?
7. Is the pallet right-side up?
8. Is the pallet placed on three-point dunnage?
9. Is cargo to be placed on the pallet securely packaged?
10. Does cargo have required markings?
11. Are hazardous materials labels prepared in accordance with 49 CFR 172.400 and AFMAN 24-204 requirements?
12. Are hazardous material labels attached to items of hazardous cargo or their containers?
13. Is cargo marked with arrows, e.g., “This Side Up,” placed with arrows pointing up?
14. Are hazardous items on pallet compatible in accordance with AFMAN 24-204/TM 38-250/MCO P4030.19F/NAVSUP Pub 505 (Rev)/DSAM 4145.3.
15. Is all hazardous cargo positioned for easy access during flight? Are hazardous cargo labels visible from inside the aircraft? Are the doors of mobility bins containing hazardous items accessible during flight.
16. Is cargo arranged on the pallet to meet the following criteria:
    a. Are the heavier boxes and crates placed on the bottom of the pallet load?
    b. Is lighter, more fragile cargo placed on the top of the pallet load?
    c. Is the cargo arranged and properly stacked so that it is stable?
17. Is the height of the built-up pallet 96-inches or less from the top skin of the pallet? If it is not and the height cannot be reduced to under 96-inches, consult your affiliated TALCE’s for guidance to determine if the pallet will fit inside the aircraft.
18. Is the pallet loaded with no more than 10,000 pounds of cargo?
19. Is the cargo loaded on the pallet in such a way that it is no longer than the usable dimensions of the pallet, i.e., 104-inches or 84-inches with no overhang? If overhang can not be avoided, ensure sufficient space is allotted for cargo to be loaded in front of and behind cargo loaded on pallets with overhang.
20. Is pallet loading limited to less than 250 pounds per square inch on the pallet’s surface? Normally, this is a problem only with very heavy cargo with a small “footprint,” such as full oil drums with a rim, heavy skid-mounted cargo, or maintenance stands, with heavy cargo stacked on top of them.
21. Is cargo susceptible to weather damage? If so, cover the cargo with a plastic pallet cover before installing cargo nets.

PALLETIZATION

22. Is cargo secured to the pallet using two side nets and a top net? When low profile cargo does not permit the use of side nets, the top net may be used for restraint in all directions (vertical, lateral, forward, and aft), provided the net weight of the pallet does not exceed 2,500 pounds and cargo height does not exceed 45-inches from the surface of the pallet. Exceeding weight or height limitations requires supplemental restraint (straps or chains) be applied to provide the required restraint.
23. Does the top net have five serviceable clips? Does each side net have five serviceable hooks along each side of its length, four along each side of its width, and one at each corner? Are nets free of tears, rips, and broken rings?
24. Lay the side nets out so that the length and width are aligned with the length and width of the pallet. Make sure the adjusting straps are on the outside of the net after installation. Beginning at any corner and proceeding to the corner diagonally opposite, attach the clips to the D-rings around the edge of the pallet and continue with the other side of the net making sure the straps are not twisted. Go back and criss-cross the two straps at each corner. Fasten the side nets together by starting at the bottom and attaching the hook at the edge of one net to the ring at the edge of the other. Make sure the straps are not twisted and the hooks open outward so the strap length can be adjusted. Pull the nets up as high as possible. Temporarily tightening the side straps is permissible, however, remember to loosen them later when tightening the top net.
25. Spread the top net on the ground top-side down, and align its length with that of the pallet. After verifying no one is standing on the far side of the pallet, throw the net over the pallet, flipping it over so it lands top-side up. Adjust the net so it is centered on the pallet. Fasten the top net hooks to the highest side net rings possible and still be able to remove all slack out of the side nets when the top net is cinched down. Make sure the straps are not twisted, then tighten the top net by shortening the straps (pulling down), alternating from end-to-end. Now go back and retighten the side net straps. Tuck all strap ends into the netting to prevent tangling in the aircraft rail or roller system.
26. Attach a placard (DD Form 2775) with pallet gross weight, identification, etc., to the netting on the 88-inch and 108-inch sides of the pallet.
27. Dunnage (3 pieces) **MUST** accompany each pallet during deployment.
28. Keys or combinations to any locked containers must accompany the item and be made available to the troop commander or cargo/custodian during transport in the event of an in-flight emergency.

PALLETIZATION

3.8. Married Pallets. In the movement of cargo, we often find odd shapes and sizes of cargo that require movement by air. The usable dimension of the 463L pallet is 104 inches by 84 inches. When there is a requirement to ship cargo that exceeds these dimensions, we must join two or more pallets together. We refer to this as the marrying of pallets (we also refer to married pallets as double or two pallet trains) (figure 3.9). The same applies to three, four, five, or six pallets when joined. Before marrying pallets, inspect them to be sure they are clean and in good repair. Ensure the rails are not bowed and the tiedown rings are securely mounted. After checking the pallets, place them on a cargo dock, rollerized flatbed truck, or K-loader. Align the indents along the 108" side of each pallet.

NOTE: Exceptions:

C-17	Aerial delivery rail system (ADS)	On 108" side of pallet
	Logistics restraint rail system (LRS)	On 88" side of pallet
KC-10	Normally on 88" side	
	Lateral loading on 108" side, prior coordination with crew is a must.	

Install spacers between the pallets (figure 3.10). The spacers are used to keep the pallets aligned and properly spaced so they will lock into the rail systems of the aircraft. The KC-10 uses a unique 1" spacer and can only be utilized on 2 pallet trains (88" or 108" bias). Your affiliated TALCE may be able to help you get any required spacers.

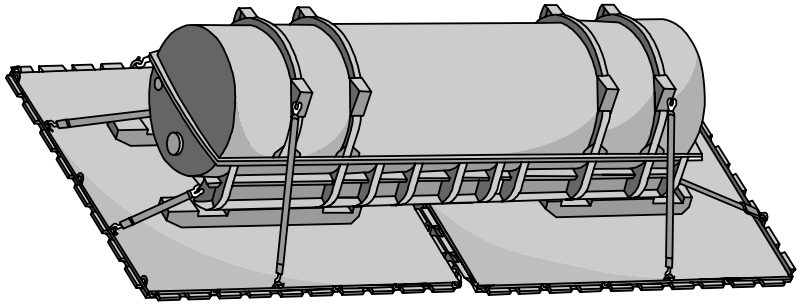


Figure 3.9. Two Pallet Train (coupled on 88" side)

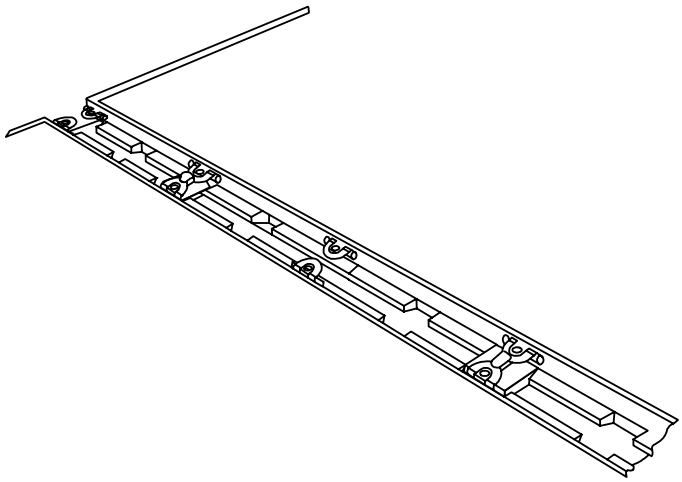


Figure 3.10. Pallet Spacers

PALLETIZATION

3.9. Tiedown Techniques. There are many techniques for tying down and lashing cargo. Some of the key points to remember are:

3.9.1. Use barrier and chain bridle (figure 3.11) for loose heavy items such as lumber and pipe. The minimum thickness for the barrier is ¾ inches (usually plywood).

1. GENERAL CARGO LOAD
2. CHAIN BRIDLE
3. TYPE MB-1 OR MB-2 TIEDOWN DEVICE
4. PALLET/PLATFORM TIEDOWN RING
5. PALLET

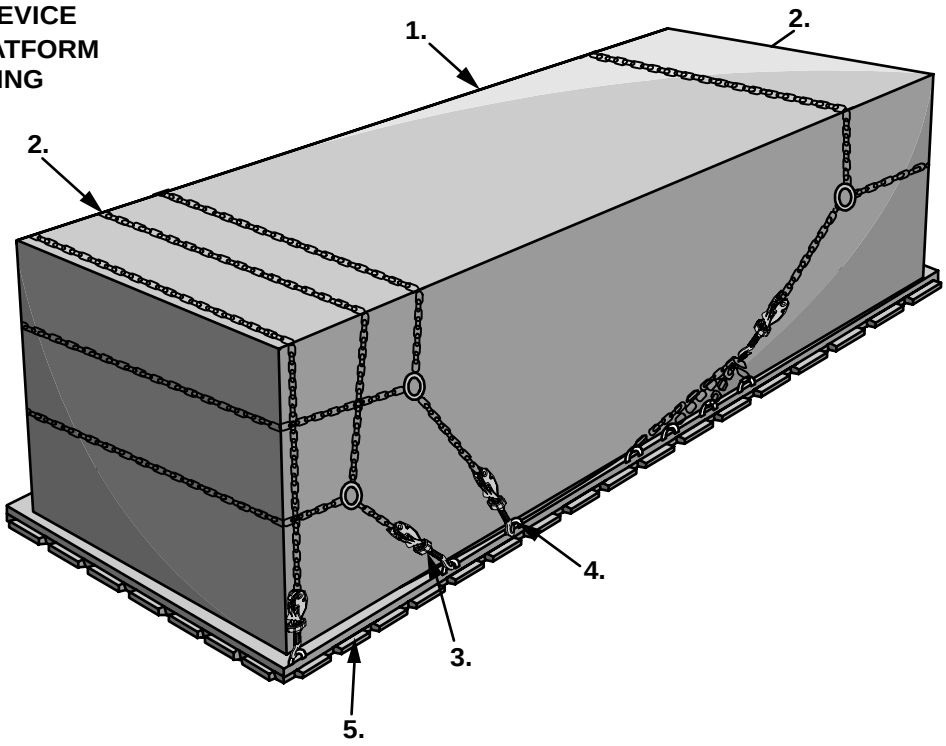


Figure 3.11. Chain Bridle

PALLETIZATION

3.9.2. Use chains and tiedown devices for large items such as canned engines or palletized wheeled items. (figure 3.12)

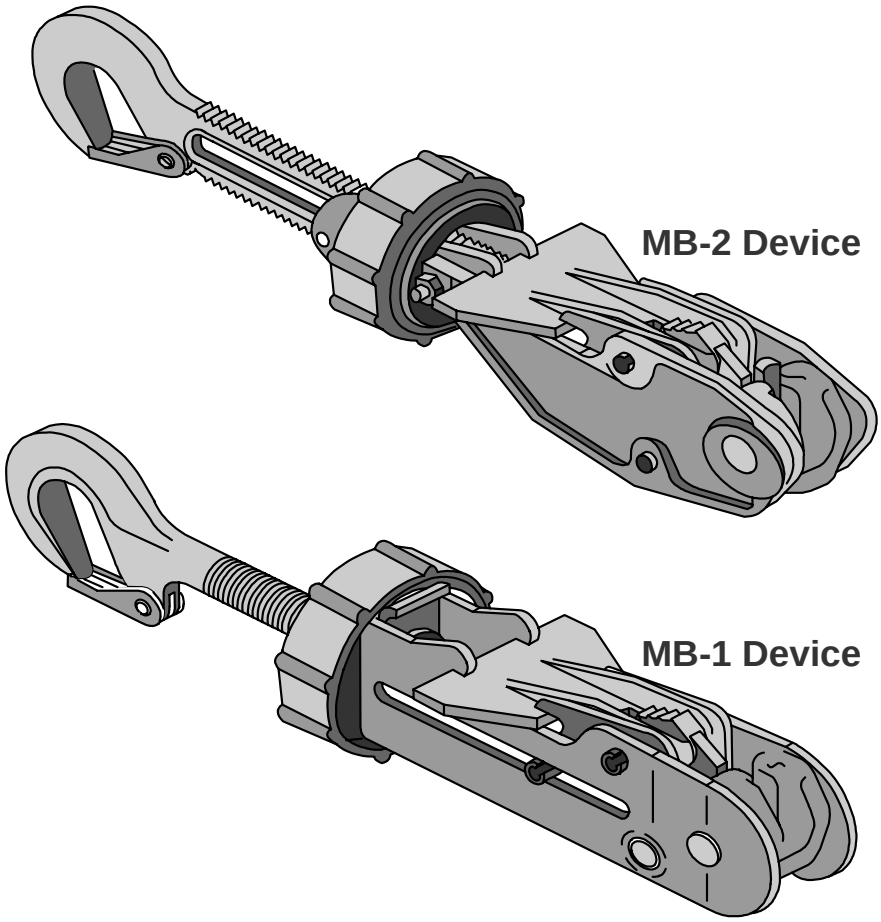


Figure 3.12. MB-1 - 10,000 pound capacity and MB-2 - 25,000 pound capacity tiedown device.

NOTE: The MB-2 – 25,000 pound capacity tiedown device is not carried aboard the KC-135 and KC-10 aircraft.

3.9.3. Do not attach more than half of the required restraint in a given direction to the axles of wheeled equipment. More than ½ of the required restraint applied to the axles will require the vehicle's suspension to assume the majority of restraint and could result in suspension failure and loose equipment in-flight.

3.9.4. Use 463L nets for multiple loose items that fit within the usable dimensions of a single 463L pallet.

PALLETIZATION

3.9.5. Use chains for heavy items such as large boxes and vehicles.

3.9.6. Finally, use 5,000-pound tiedown straps, as required, to provide supplemental restraint, individual item restraint, or supplemental restraint in conjunction with 463L pallet nets. Do not use a mixture of nylon straps and metal chains to provide restraint in the same direction for the same piece of cargo. The nylon can stretch forcing the metal chain to assume the entire applied load and could result in chain failure. (See figures 3.13 and 3.14)

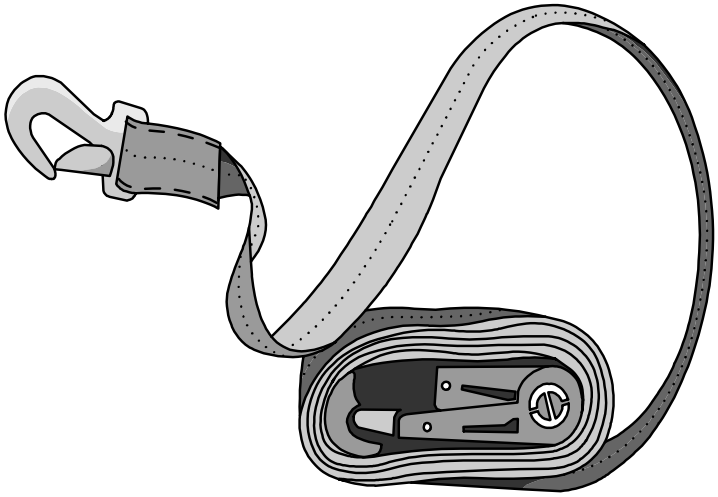


Figure 3.13. 5,000 Pound Tiedown Strap

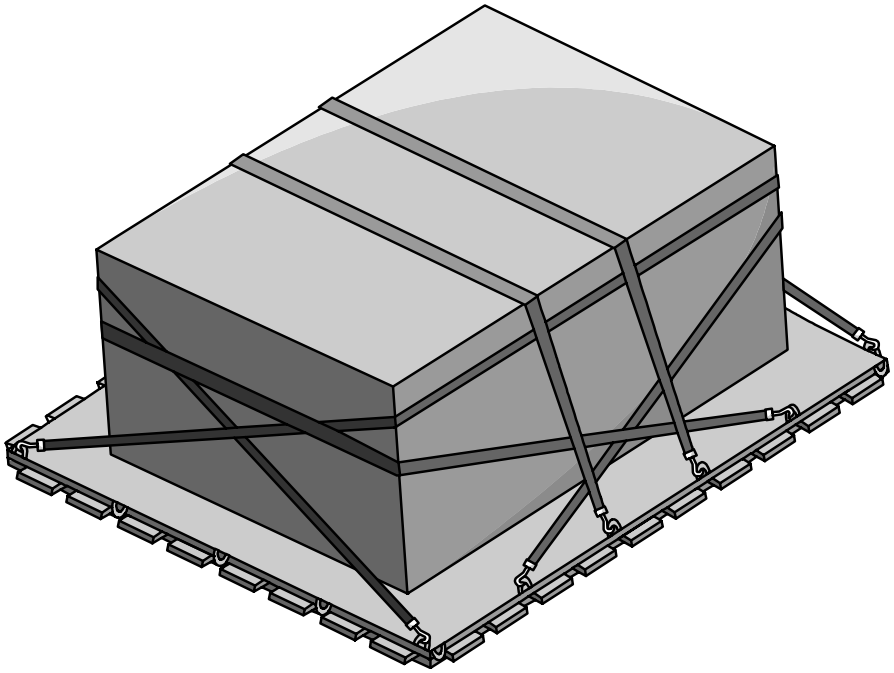


Figure 3.14. Cargo Restraint for all Load Directions

PALLETIZATION

Chapter 3—Homework Assignment

1. The overall dimensions of the 463L pallet are 88 inches by 108 inches by 2 ¼ inches thick. However, the usable dimensions of the upper surface are _____ inches by _____ inches.

2. A complete set of 463L nets will provide adequate restraint for _____ pounds of cargo when properly attached to a 463L pallet, with height not exceeding ____ inches above the surface of the pallet.

3. All pallets are required to be shipped with _____. This is required for both deployment and redeployment and must be provided by the _____.

4. Attach a placard (DD Form 2775) with pallet gross weight, identification, etc., to the netting on the ___-inch and ____-inch sides of the pallet.

5. Do not attach more than _____ of the required restraint in a given direction to the _____ of wheeled equipment.

WEIGHING AND MARKING

chapter
4
AMC

Lesson Objectives: The objective of this lesson is for each student to comprehend how to properly weigh and mark cargo for airlift operations.

References: DOD 4500.9-R Defense Transportation Regulation Part III, Mobility (DTR)
1C-130A-9, Cargo Loading Manual
1C-141B-9, Loading Instructions
1C-5A-9, Loading Instructions
1C-17A-9, Technical Manual Cargo Loading Instructions
1C-135(K)A-9, Technical Manual Cargo Loading Instructions
1C-10(K)A-9, Cargo Loading Manual
AMCI 24-101 V11, Transportation, Cargo and Mail

Web Pages:

Learning Activities:
1. Weighing
2. Pallet identifier
3. Center of balance

Test Objectives:
1. Describe how to compute a weight and balance formula
2. Explain how to measure distances to determine center of balance
3. Describe how to weigh vehicles with different types of scales
4. Give examples on how to fill out a DD Form 2775

WEIGHING AND MARKING

4.1. General. Airlift aircraft will only accept items of cargo with the proper weight and center of balance marked. Cargo improperly weighed or marked could cause an unsafe flight condition putting the mission in jeopardy. The proper weighing and marking of cargo is one of the most important tasks you will accomplish while preparing for airlift.

4.2. Weighing. All cargo offered for air shipment must be weighed. Either portable or fixed scales are acceptable. Indicate actual weight on each side of a vehicle, pallet, or single item planned for air shipment. Do not weigh the cargo until all secondary loads are secured for flight. Once weighed and marked, do not add or remove any items of cargo. Any additions or deletions will require the cargo to be weighed again.

4.3. Fixed Scales (figure 4.1). Fixed scales are permanently installed weighing devices, located at most major military installations. They are similar to the truck scales seen along the side of major American highways. This type of scale is capable of weighing most items of cargo.

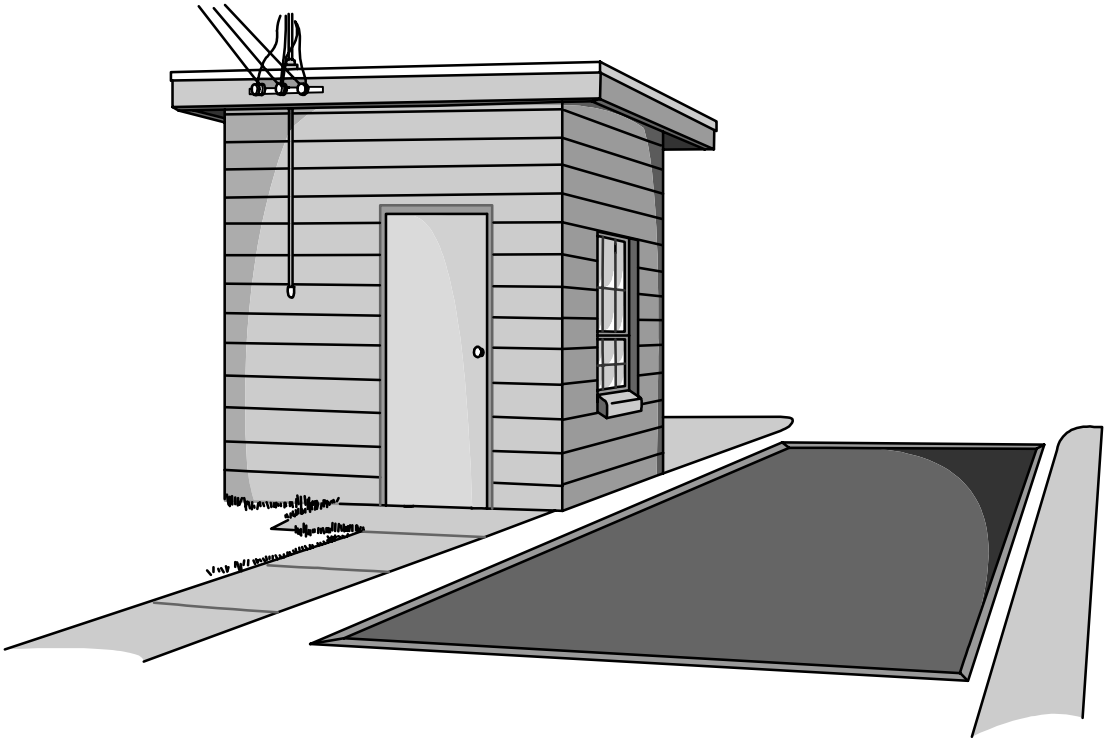


Figure 4.1. Fixed Scales

4.4. Portable Scales (figure 4.2). The most commonly used portable scales are capable of weighing cargo up to 20,000 pounds per scale. These scales are used extensively at airfields, unit areas, marshalling areas, inspection areas, and forward operating locations. Portable scales are normally used in multiples of four. However, a minimum of two scales will be used. It is advisable for all units to have their own scales to help ensure a smooth deployment.

WEIGHING AND MARKING

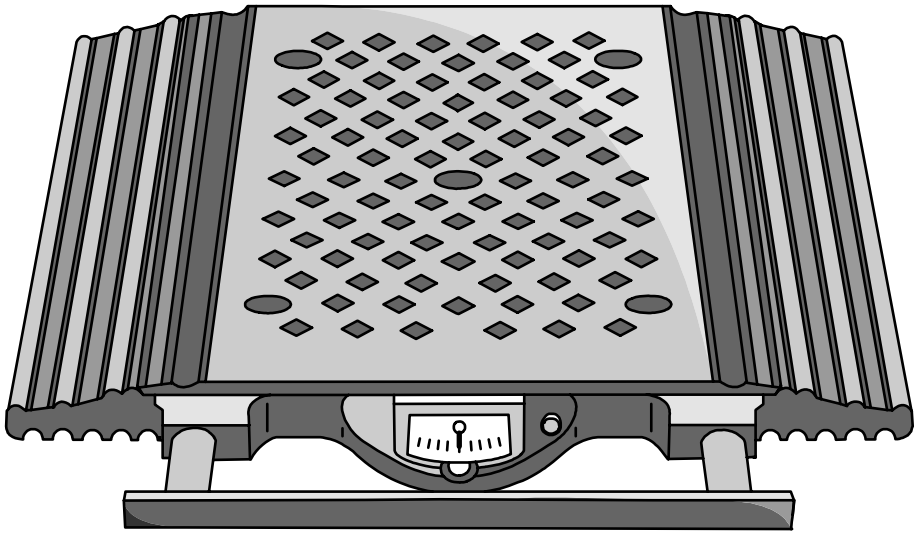


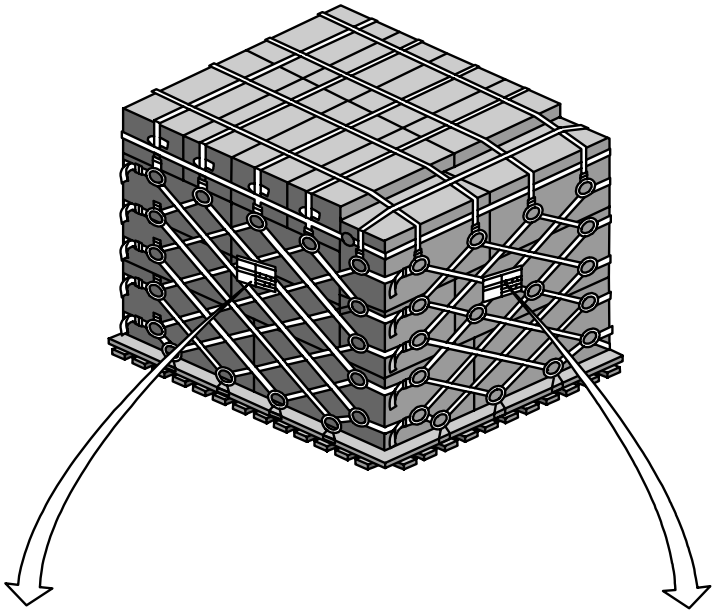
Figure 4.2. Portable Scales

4.4.1. Weighing Vehicles. If only two portable scales are available, use the following procedures for weighing of vehicles. Place the scales in front of the tires of the first axle, drive the vehicle onto the scales (with the vehicle tires centered evenly on scales) and record the weight over the appropriate axle. To determine the axle weight, each scale weight (right and left side) must be combined to obtain the axle weight. Continue this process until all axles are weighed.

NOTE: The driver and/or passengers must be out of the vehicle prior to weighing the axle/ axles.

4.4.2. Weighing Pallets. Each 463L pallet built must be weighed and the scale weight must be recorded on all copies of the manifest. Place a loaded pallet evenly on two portable scales (three pieces of dunnage must be weighed with the pallet). Add the two scale weights together to get the pallet gross weight. Ensure the scale weight is clearly marked on one 88-inch side and one 108-inch side of the pallet. Use DD Form 2775, (Pallet Identifier) or placard to annotate the required information for cargo documentation (figure 4.3).

WEIGHING AND MARKING



PALLET IDENTIFIER				
1. PALLET IDENTIFICATION NUMBER	2. AIRCRAFT CONFIGURATION			
3. ORIGINATING STATION	4. DESTINATION STATION			
5. NET WEIGHT (Lbs.)	6a. STRAPS	b. CHAINS	c. DEVICES	d. NET SETS
7. MISCELLANEOUS INFORMATION/THIS PALLET CONTAINS:	8. GROSS WEIGHT (Lbs.)			
	9. SCALE WEIGHT CERTIFICATION			
	a. NAME	b. GRADE	c. DATE *(YYYMMDD)*	
	10. CUBE THIS PALLET			
CARGO				

DD FORM 2775, SEP 1998 (EG) REPLACES AF FORM 2279, MAY 84 Designed using Perform Pro, WHS/DIOR, Sep 98

Figure 4.3. 463L Pallet Weight Markings

NOTE: DD Form 2775, SEP 1998 replaces AF Form 2279, MAY 84 which is obsolete.

4.4.2.1. DD Form 2775 (Pallet Identifier). Prepare two copies of DD Form 2775 to identify all completed 463L pallet/trains loaded with cargo/mail. Attach the copies to the upper left hand corner at eye level (when pallet height permits) on one 88-inch side and on one 108-inch side. Place the form inside interlocking closure plastic bags (NSN 8105-00-837-7757, or suitable substitute). Entries on the form are self-explanatory. In addition, comply with the following.

WEIGHING AND MARKING

4.4.2.2. If the DD Form 2775 is unavailable, a legible substitute can be accepted with the following information as a minimum.

- Point of Embarkation (POE)
- Point of Debarkation (POD)
- Gross Weight
- Net Weight
- Transportation Control Number (TCN)
- Height

4.4.2.3. Enter port of embarkation (POE) and port of debarkation (POD) codes in letters as large as possible. The intent is to make the entries visible from a distance when pulling pallets for a load.

NOTE: This form must never reflect the words “classified,” “small arms/weapons,” “munitions,” or other highly sensitive items by name.

4.4.2.4. Annotate the amount of straps, chains, devices, and net sets used on a particular pallet or pallet train in the appropriate blocks of the form.

4.4.2.5. The scale weight certification block will be completed by legibly printing the name and grade of the individual who performed the weighing of the pallet.

4.5. Center of Balance Calculation Terms. An understanding of the following terms and abbreviations is necessary for calculating the center of balance:

4.5.1. RDL = reference datum line **(also called reference line)** (figure 4.4). A line from which all measurements are taken. Normally, the RDL is established at the forward front edge of a vehicle. Once the reference line is established, don’t change it.

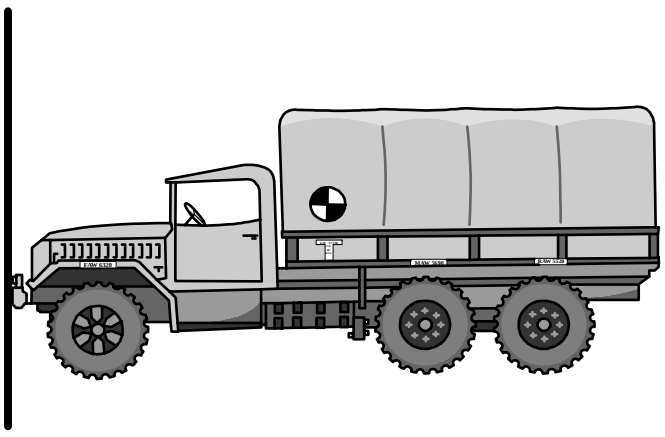


Figure 4.4. Reference Line

WEIGHING AND MARKING

4.5.2. CB = center of balance. The point of balance of a piece of cargo (figure 4.5).

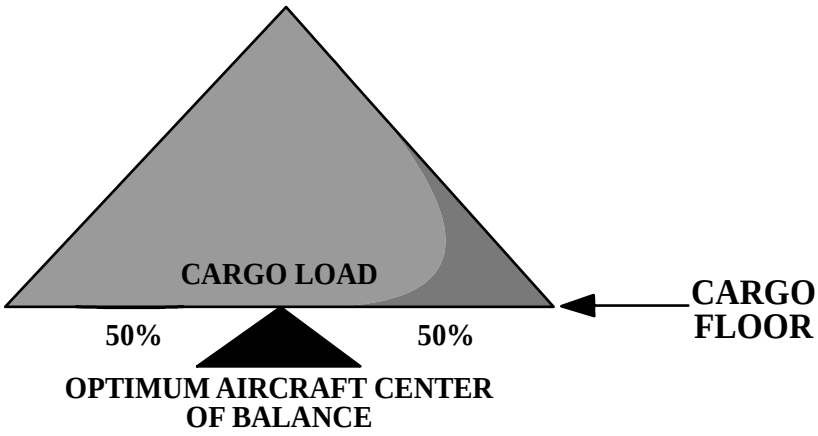


Figure 4.5. Center of Balance Model

4.5.3. GW = gross weight. The total weight of an item of cargo, including all secondary cargo.

4.5.4. W1 = weight one. Used in computing the CB. W1 defines the first weight contacting the floor from the R/L (figure 4.6).

4.5.5. W2 = weight two. Used in computing the CB. W2 defines the second weight contacting the floor from the R/L (figure 4.6).

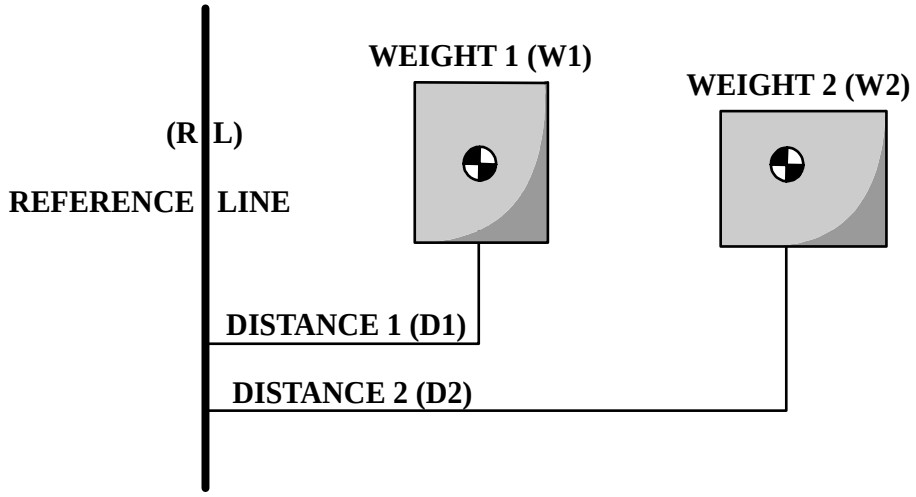


Figure 4.6. Center of Balance Model (W1, W2)

WEIGHING AND MARKING

4.5.6. W3, W4, and W5 = weight three, weight four, and weight five. Terms used to define subsequent weights after W1 and W2 (figure 4.7).

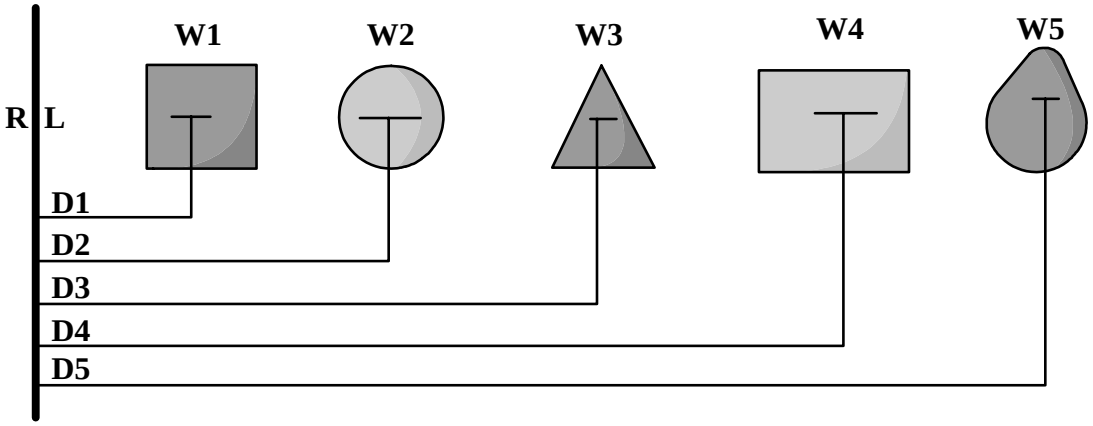


Figure 4.7. Center of Balance Model (W1 through W5)

((D1 x W1) + (D2 x W2)+(D? x W?)…) ÷ Total Weight = CB from RL

4.5.7. D1 = distance one. The distance from the RL to W1, measured in inches (figure 4.8).

4.5.8. D2 = distance two. The distance from the RL to W2, measured in inches (figure 4.8).

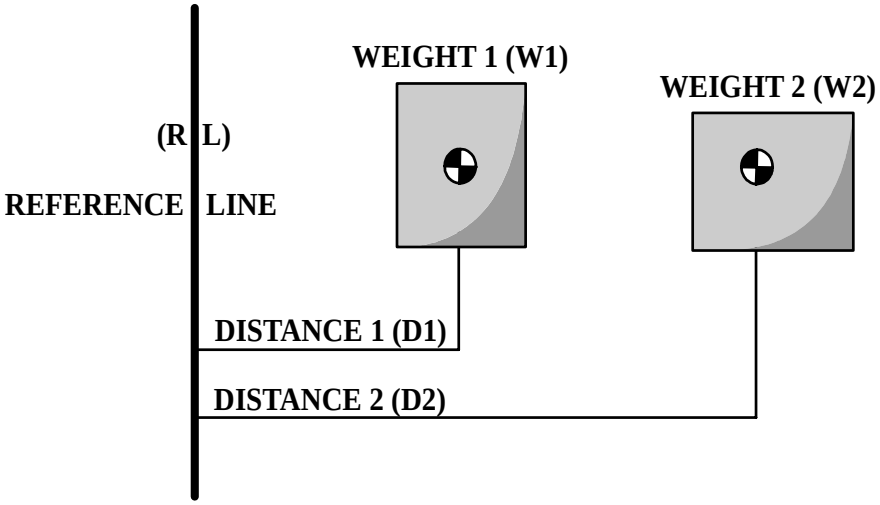


Figure 4.8. Center of Balance Model (W1, W2)

4.5.9. D3, D4, and D5 = distance three, distance four, and distance five. Subsequent distances (always measured in inches) from the RL to the appropriate weights (figure 4.7).

4.5.10. M = moment (inch-pound). The product obtained by multiplying weight (in pounds) by distance (in inches) from the RL.

WEIGHING AND MARKING

4.5.11. FAW = front/forward axle weight. The front axle of a vehicle. The first axle from the RL (figure 4.11.)

4.5.12. MAW = middle axle weight. The axle(s) between the front and rear axle. The MAW is measured from the RL (figure 4.11.)

4.5.13. RAW = rear axle weight. The rear axle of a vehicle. The last axle of the vehicle from the RL (figure 4.11.)

4.5.14. FFE = from forward end. Distance measured from the most forward edge of a vehicle to the CB of a vehicle.

4.5.15. FOH = front overhang. Distance in inches from front bumper to center of front axle.

4.6. Center of Balance Criteria. Marking the center of balance is not necessary on individual 463L pallets. If 463L pallets are built correctly, the center of balance will be at or near the center. However, you must place center of balance (CB) markings on married pallets or pallet trains (figure 4.9).

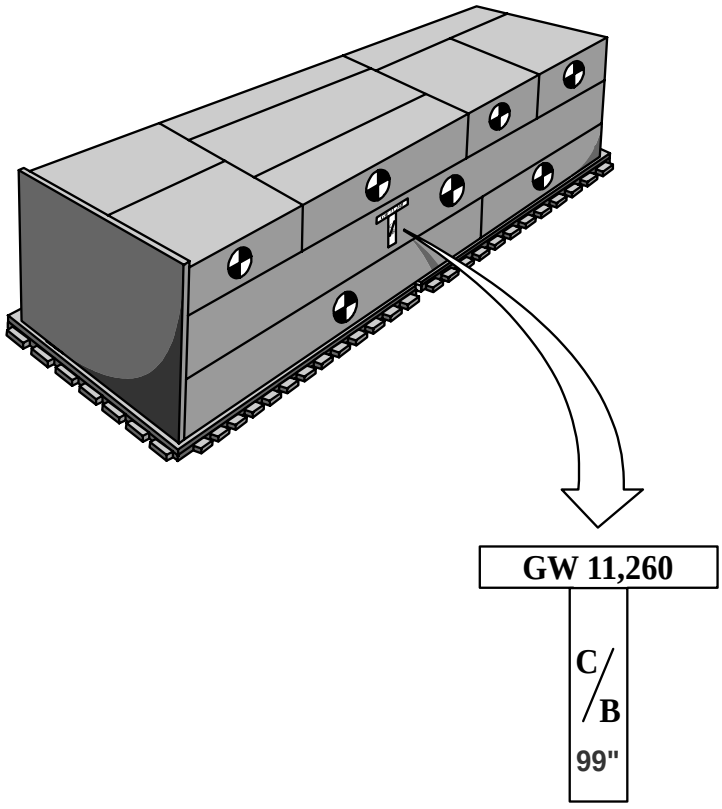


Figure 4.9. CB Markings Married Pallets

WEIGHING AND MARKING

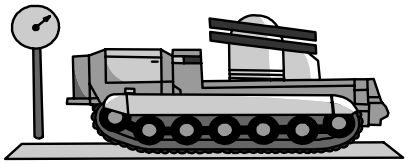
4.6.1. Mark the center of balance (CB) on all items of cargo that meet the following criteria:

- All vehicles.
- Any item of cargo 10 feet or longer.
- Any item with a CB at a point other than its center.

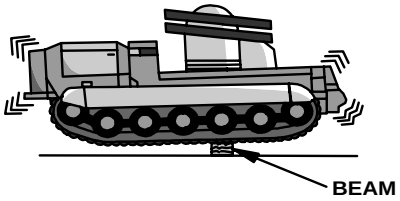
4.6.2. To determine the CB of a tracked vehicles and other long non-wheeled items by placing them on a log or pole (figure 4.10) or weighing them and using the formula shown in figure 4.12.

Tracked Vehicle Example

Step 1. To determine weight, drive the vehicle onto a platform scale (truck scale or coal yard scale), large enough to accomidate the entire vehicle. Record weight.



Step 2. To determine CB, drive the vehicle onto a wooden beam or pole until it tilts foreward. Mark the side of the vehicle at the point of tilt.



Step 3. With appropriate materials, mark the CB and gross weight of the vehicle.

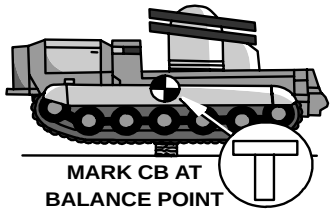


Figure 4.10. Weight and Balance Example - Tracked Vehicle
(Item teeters over the fulcrum at its balance point or Center of Balance)

WEIGHING AND MARKING

4.7. Marking Procedures. After computing the CB of the vehicle, mark its location and gross weight on both sides of the vehicle using weather resistant masking tape and grease pencil/magic marker, forming the letter “T”. The horizontal portion of the “T” will contain the gross weight information, and the vertical portion of the “T” will contain the letters “CB,” to indicate the exact position of the vehicle’s CB. Also indicate number of inches from the RDL of the CB location and mark axle weights above each axle on both sides of the vehicle (figure 4.11).

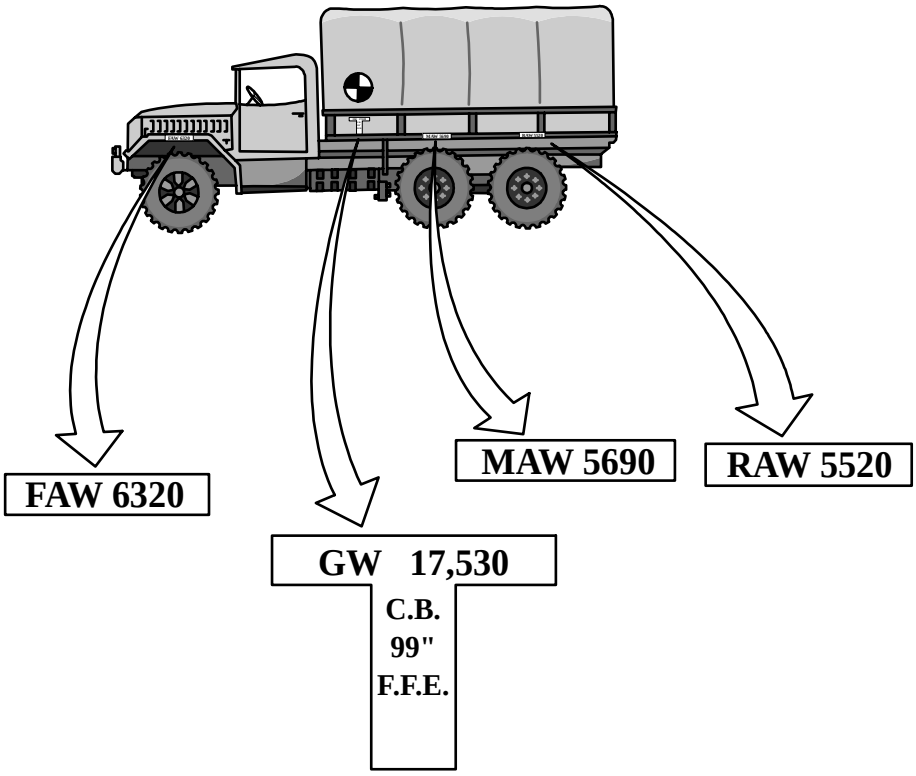


Figure 4.11. Marking Procedures

WEIGHING AND MARKING

4.8. CB Computations. Use the basic weight and balance formula shown below to compute the center of balance of wheeled items. Figures 4.13 through 4.23 are sample problems to familiarize you with CB calculations. **Round decimals to the nearest whole number.**

WEIGHT X DISTANCE = MOMENT

MOMENT ÷ DISTANCE = WEIGHT

MOMENT ÷ WEIGHT = CB (DISTANCE)

TOTAL MOMENT ÷ TOTAL WEIGHT = CB (DISTANCE)

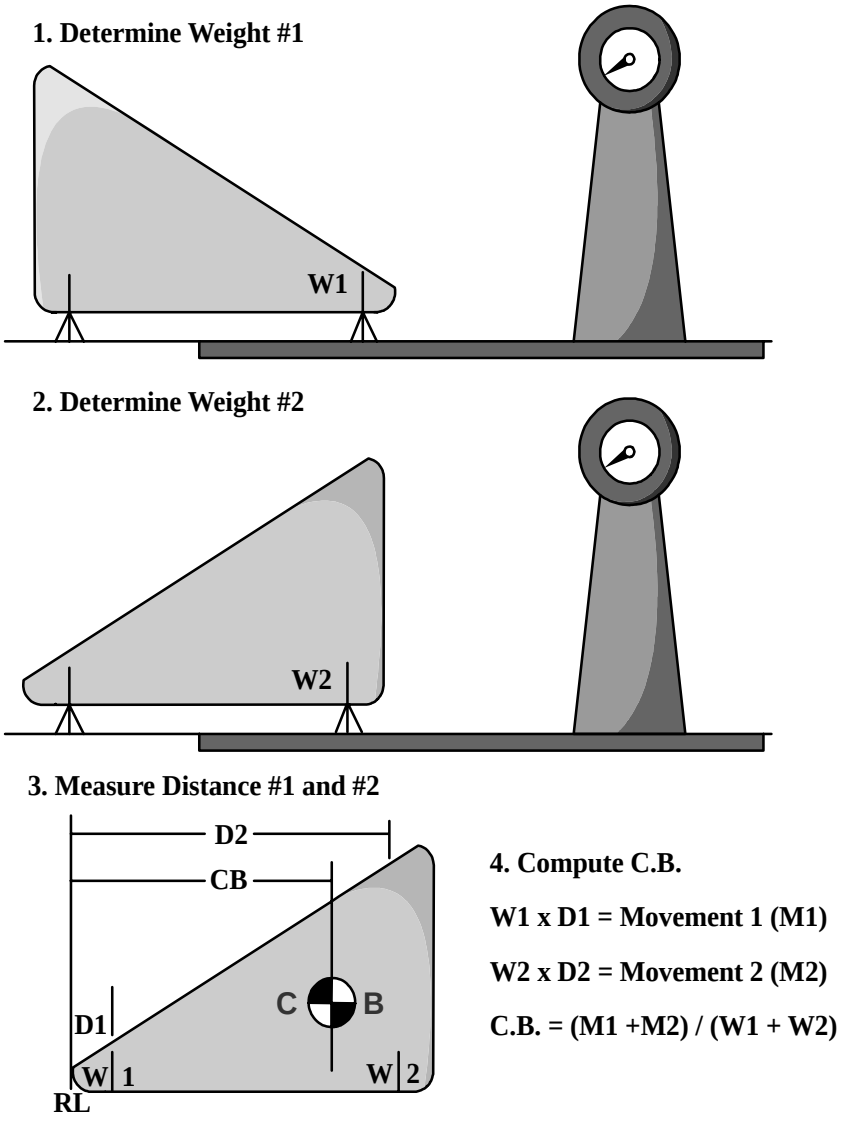
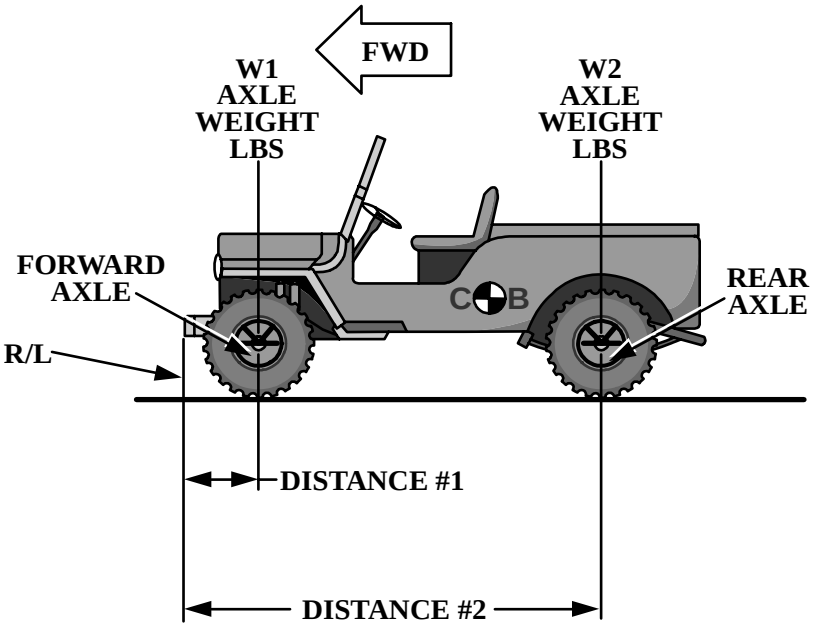


Figure 4.12. Sample Problem, Cargo Center of Balance Computations

WEIGHING AND MARKING
SAMPLE PROBLEM



PROBLEM:

Distance #1 - 25” Front Axle Weight - 1,400 lbs.

Distance #2 - 97” Rear Axle Weight - 1,050 lbs.

SOLUTION: Jeep

	WT	x	DISTANCE	=	MOMENT
1.	1,400	x	25”	=	35,000
2.	1,050	x	97”	=	101,850
TOTAL	**2,450**				**136,850**

136850 ÷ 2450 = _____INCHES ?

Figure 4.13. Sample Problem, Cargo Center of Balance Computations

WEIGHING AND MARKING

SAMPLE PROBLEM

PROBLEM: M1008

Distance #1 - 30” Front Axle Weight = 3,300 lbs.

Distance #2 - 198” Rear Axle Weight = 3,600 lbs.

SOLUTION: M1008

	WT	x	DISTANCE	=	MOMENT
1.		x	”	=	
2.	_____	x	”	=	_____
TOTAL	_____				_____

_____ ÷ _____ = _____ INCHES ?

Figure 4.14. Sample Problem, Cargo Center of Balance Computations

WEIGHING AND MARKING
SAMPLE PROBLEM

PROBLEM: M1026

Distance #1 - 35” Front Axle Weight = 3,000 lbs.

Distance #2 - 155” Rear Axle Weight = 3,200 lbs.

SOLUTION: M1026

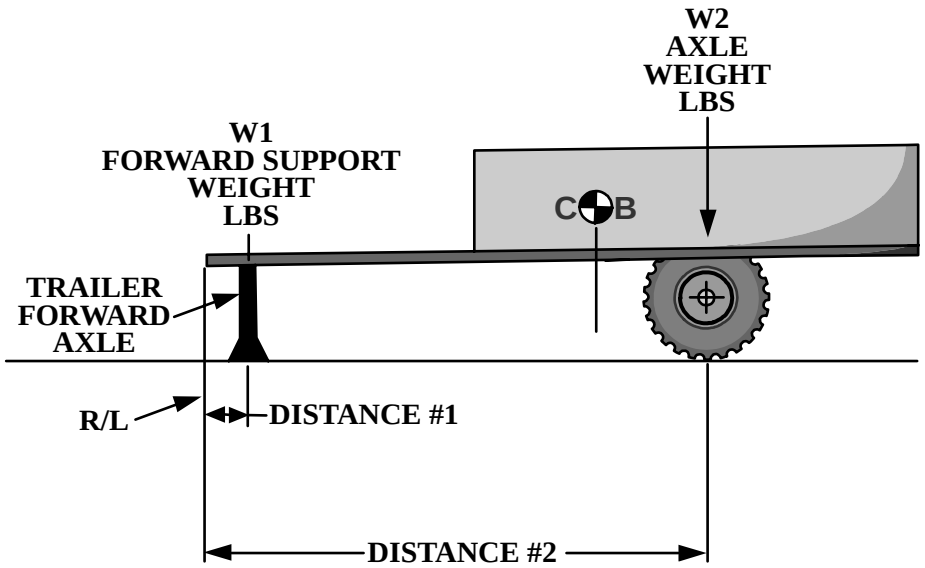
	WT	x	DISTANCE	=	MOMENT
1.		x	”	=	
2.	_____	x	”	=	_____
TOTAL	_____				_____

_____ ÷ _____ = _____ INCHES ?

Figure 4.15. Sample Problem, Cargo Center of Balance Computations

WEIGHING AND MARKING

SAMPLE PROBLEM



PROBLEM: Trailer

Distance #1 - 14” Support Weight - 50 lbs.

Distance #2 - 60” Axle Weight - 490 lbs.

SOLUTION: Trailer

	WT		DISTANCE		MOMENT
1.	50	x	14”	=	700
2.	490	x	60”	=	29,400
TOTAL:	**540**				**30,100**

30,100 ÷ 540 = _____inches

Figure 4.16. Sample Problem, Cargo Center of Balance Computations

WEIGHING AND MARKING
SAMPLE PROBLEM

PROBLEM: Trailer

Distance #1 - 14” Support Weight = 80 lbs.

Distance #2 - 60” Axle Weight = 1,250 lbs.

SOLUTION: Trailer

	WT	x	DISTANCE	=	MOMENT
1.		x	”	=	
2.	_____	x	”	=	_____
TOTAL	_____				_____

_____ ÷ _____ = _____ INCHES ?

Figure 4.17. Sample Problem, Cargo Center of Balance Computations

WEIGHING AND MARKING

SAMPLE PROBLEM

PROBLEM: Trailer

Distance #1 - 14” Support Weight = 110 lbs.

Distance #2 - 60” Axle Weight = 1,000 lbs.

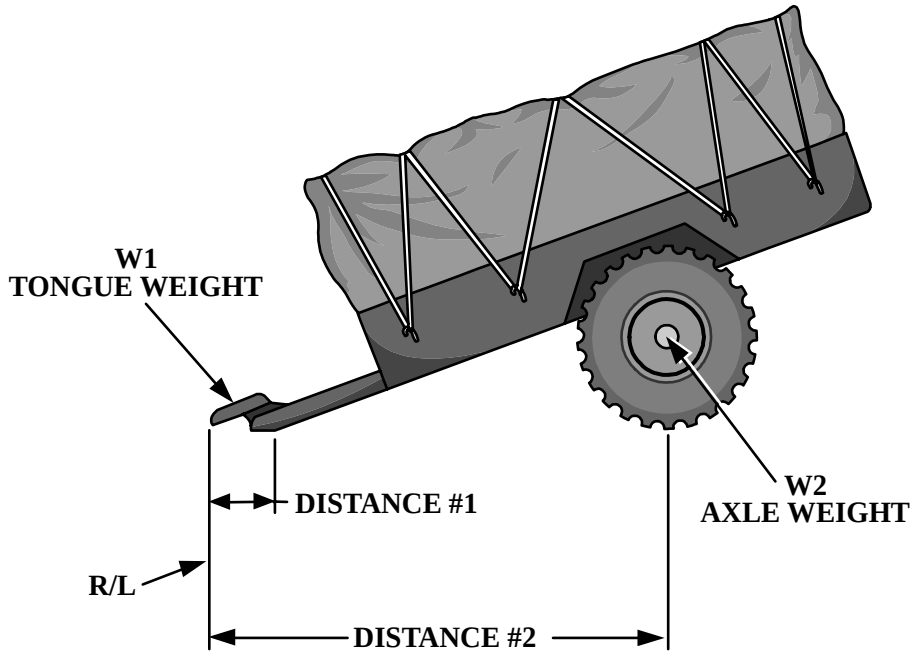
SOLUTION: Trailer

	WT	x	DISTANCE	=	MOMENT
1.		x	”	=	
2.	_____	x	”	=	_____
TOTAL	_____				_____

_____ ÷ _____ = _____ INCHES ?

Figure 4.18. Sample Problem, Cargo Center of Balance Computations

WEIGHING AND MARKING
SAMPLE PROBLEM



PROBLEM: Trailer

Distance #1 - 13” Tongue Weight - 75 lbs.

Distance #2 - 94” Axle Weight - 850 lbs.

SOLUTION: Trailer

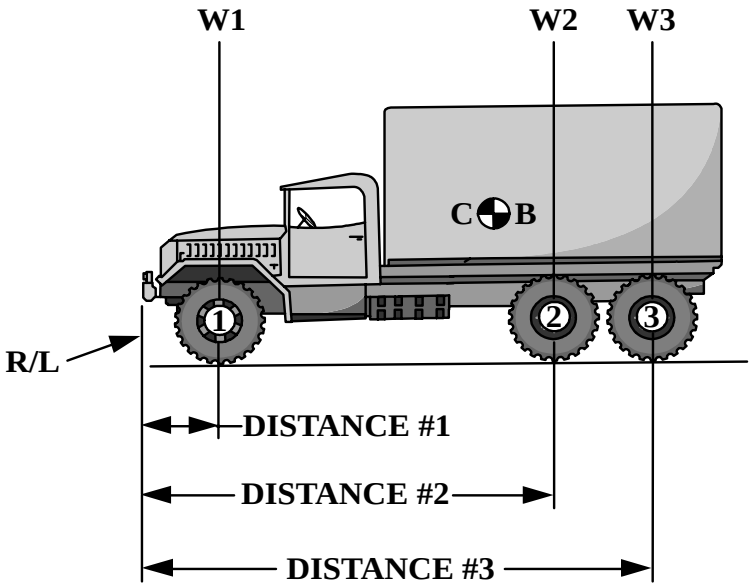
	WT	x	DISTANCE	=	MOMENT
1.		x	”	=	
2.	_____	x	”	=	_____
TOTAL	_____				_____

_____ ÷ _____ = _____ INCHES ?

Figure 4.19. Sample Problem, Cargo Center of Balance Computations

WEIGHING AND MARKING

SAMPLE PROBLEM



PROBLEM: Cargo Truck

Distance #1 -	30”	Front Axle Weight -	5,100 lbs.
Distance #2 -	130”	Middle Axle Weight -	3,200 lbs.
Distance #3 -	178”	Rear Axle Weight -	3,200 lbs.

SOLUTION: Cargo Truck

	WT	x	DISTANCE	=	MOMENT
1.		x	”	=	
2.		x	”	=	
3.	_____	x	”	=	_____
TOTAL	_____				_____

_____ ÷ _____ = _____ INCHES ?

Figure 4.20. Sample Problem, Cargo Center of Balance Computations

WEIGHING AND MARKING
SAMPLE PROBLEM

PROBLEM: Truck

Distance #1 -	30”	Front Axle Weight =	4,900 lbs.
Distance #2 -	130”	Middle Axle Weight =	4,000 lbs.
Distance #3 -	178”	Rear Axle Weight =	4,000 lbs.

SOLUTION: Truck

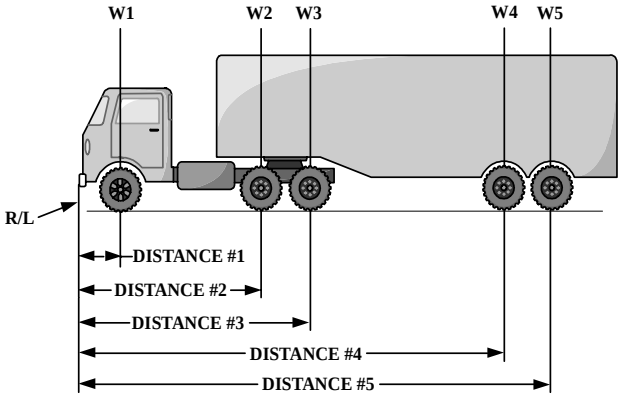
	WT	x	DISTANCE	=	MOMENT
1.		x	”	=	
2.		x	”	=	
3.	_____	x	”	=	_____
TOTAL	_____				_____

_____ ÷ _____ = _____ INCHES ?

Figure 4.21. Sample Problem, Cargo Center of Balance Computations

WEIGHING AND MARKING

SAMPLE PROBLEM



PROBLEM: Tractor Trailer

Distance #1 -	50”	Front Axle Weight -	9,000 lbs.
Distance #2 -	110”	Axle #2 Weight -	5,050 lbs.
Distance #3 -	155”	Axle #3 Weight -	5,050 lbs.
Distance #4 -	570”	Axle #4 Weight -	7,700 lbs.
Distance #5 -	615”	Rear Axle Weight -	7,700 lbs.

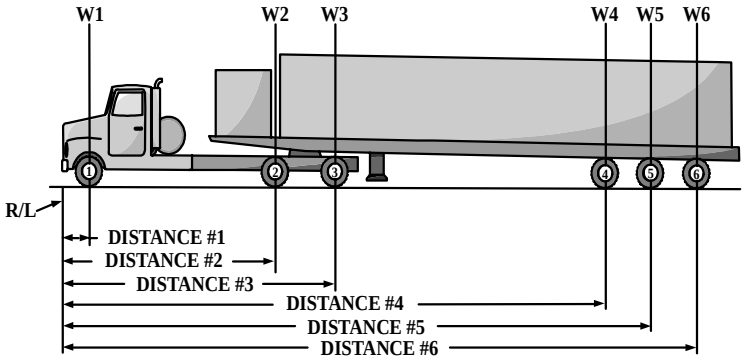
SOLUTION: Tractor Trailer

	WT	x	DISTANCE	=	MOMENT
1.		x	”	=	
2.		x	”	=	
3.		x	”	=	
4.		x	”	=	
5.	_____	x	”	=	_____
TOTAL	_____				_____

_____ ÷ _____ = _____ INCHES ?

Figure 4.22. Sample Problem, Cargo Center of Balance Computations

WEIGHING AND MARKING
SAMPLE PROBLEM



PROBLEM: Tractor Trailer

Distance #1 -	50”	Front Axle Weight -	10,300 lbs.
Distance #2 -	167”	Axle #2 Weight -	13,450 lbs.
Distance #3 -	257”	Axle #3 Weight -	13,450 lbs.
Distance #4 -	656”	Axle #4 Weight -	23,800 lbs.
Distance #5 -	702”	Axle #5 Weight -	23,800 lbs.
Distance #6 -	748”	Rear Axle Weight -	23,800 lbs.

SOLUTION: Tractor Trailer

	WT	x	DISTANCE	=	MOMENT
1.		x	”	=	
2.		x	”	=	
3.		x	”	=	
4.		x	”	=	
5.		x	”	=	
6.	_____	x	”	=	_____
TOTAL	_____				_____

_____ ÷ _____ = _____ INCHES ?

Figure 4.23. Sample Problem, Cargo Center of Balance Computations

WEIGHING AND MARKING

Chapter 4—Homework Assignment

1. Airlift aircraft will only accept items of cargo with the proper _____ and _____ of _____ marked.

2. All _____ offered for air shipment must be _____.

3. Do not weigh the cargo until all _____ _____ are secured for _____.

4. The _____ and/or _____ must be out of the vehicle prior to weighing the axle/axles.

5. The horizontal portion of the “T” will contain the _____ _____ information, and the vertical portion of the “T” will contain the letters _____ to indicate the exact position of the vehicle’s CB.

WEIGHING AND MARKING

MATERIALS HANDLING EQUIPMENT

chapter
5
AMC

Lesson Objective: The objective of this lesson is for each student to know the correct type of material handling equipment to use during aircraft loading procedures.

References: DOD 4500.9-R Defense Transportation Regulation Part III, Mobility (DTR)

Web Pages:

Learning Activities:
1. Availability
2. Forklifts
3. K-loaders
4. Wide Body Loaders
5. Additional loading aids

Test Objectives:
1. List the various types of material handling equipment available for loading
2. Match the loaders most appropriate for loading aircraft presented
3. Identify the different characteristics of each piece of material handling equipment in the AMC inventory

MATERIALS HANDLING EQUIPMENT

5.1. Materials Handling Equipment (MHE). Materials Handling Equipment describes equipment used in the packaging, handling, or transporting cargo in preparation for air shipment. Although there is an almost endless list of this type of equipment, this chapter describes the most common types used.

5.2. Availability. Because AMC is a full time transportation agency, the command's inventory of MHE is quite large. Even with such a large inventory, most MHE is dedicated to AMC aerial ports for day to day operations. Repositioning MHE from AMC and other Air Force bases to on-load locations is expensive, time consuming, and occupies a tremendous amount of available airlift cargo space. For these reasons, you have a responsibility (as the user of airlift) to provide as much MHE from local sources as possible. Many pieces of MHE that will adequately serve your needs may be found within your unit or on your installation. By the same token, you must remember to plan and coordinate for the use of MHE at deployed locations. Cargo that cannot be removed and transported from the airplane after it arrives is of little value to you. However, if you do require MHE support, contact your affiliated TALCE as early as possible to arrange for assistance.

5.3. Forklifts. Forklifts are used to lift, transport, and stack cargo or equipment. Their use saves time and money in handling of cargo. Forklifts are located at almost every military installation. These pieces of equipment are extremely valuable in all phases of cargo movement. They aid in cargo build-up at the unit area, transporting cargo to the airfield, and aircraft loading. Listed below are descriptions of several common types of forklifts, their respective capabilities, and a few of the advantages and disadvantages of each.

NOTE: The only forklifts authorized to operate inside the aircraft cargo compartment is the 4,000 pound capacity, USMC MHE-237, rough terrain forklift and the 10,000/13,000 pound capacity, adverse terrain forklift. Cargo floor ground loading axle limitations must not be exceeded while operating within the aircraft. Prior coordination is required.

5.3.1. USMC MHE-237 Rough Terrain 4K Forklift (figure 5.1). The USMC MHE-237 rough terrain 4K forklift is designed for use in close quarters for storage and shipping operations. In the air terminal area, it is used primarily for loading and unloading pallets and secondary cargo on vehicles. With the tines (forks) removed and the addition of a front-mounted pintle hook, the 4K forklift makes an excellent pusher vehicle (paragraph 5.6). The 4K is designed for high maneuverability and ease of operation in confined areas. It is capable of lifting and transporting loads up to 4,000 pounds. The tines will raise or lower and tilt forward or aft. Some models can even shift the load right or left. The only disadvantages of the 4K forklift are the limited weight lifting capability and the short tines. Because of the short tines the 4K cannot handle 463L pallets.

MATERIALS HANDLING EQUIPMENT

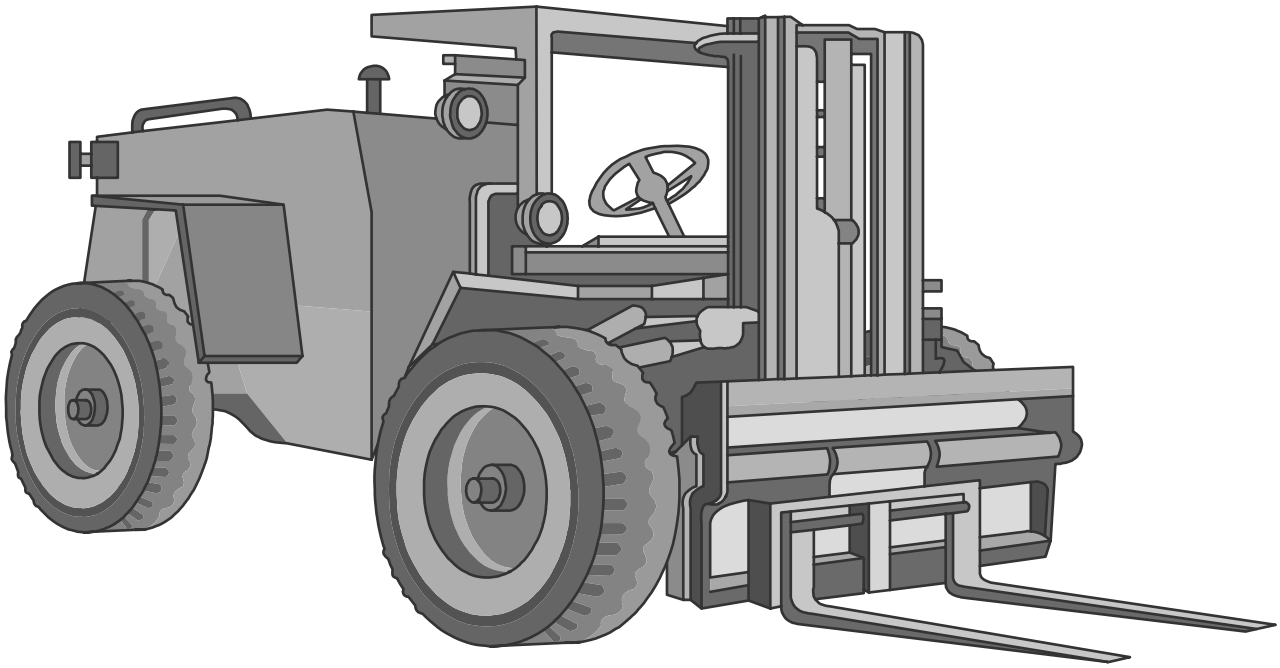


Figure 5.1. 4K Forklift

NOTE: United States Army and United States Air Force 4K forklifts are not approved for use with locally manufactured pintle hooks. Engineering analysis and approval for use of such a plate on Army or Air Force forklifts must first be obtained from either:

United States Army:
Commander
United States Army TACOM
Attn: AMSTA-MVM/Mr. Cloutier
Warren MI 48397-5000

United States Air Force:
WR-ALC/LVRE
Robins AFB GA 31098-5345

5.3.2. 6K Rough Terrain (RT) Forklift (Figure 5.2). The 6K RT forklift is considerably larger than the 4K. These vehicles are normally only found in US Army and Marine Corps inventories. It is designed to rapidly build up and move air transportable cargo. When equipped with a set of tine extenders (paragraph 5.3.4), the 6K can lift 6,000 pounds and, unlike the 4K, may be used to load airlift aircraft with 463L pallets.

MATERIALS HANDLING EQUIPMENT

Figure 5.2. 6K Forklift

5.3.3. 10K Standard Forklift: The 10K forklift is the most common forklift in the airlift inventory. As its name implies, the 10K can lift and transport 10,000 pounds of cargo. Like the 6K, the 10K can load 463L pallets onto airlift aircraft. Using rollerized tines on the forks makes it easier to load 463L pallets.

5.3.3.1. The 10K standard forklift is similar to the 4K in appearance only much larger. The 10K-standard forklift is capable of loading the C-130, KC-135, C-141, C-17, and C-5 aircraft.

5.3.3.2. The 10/13K adverse terrain (AT) forklift (Figures 5.3 and 5.4) is similar in appearance to a front scoop loader with forklift tines substituted for the earth moving bucket. The 10/13K AT-forklift is capable of loading the C-130, C-141, C-17, and C-5 aircraft.

NOTES:
1. If rollerized tines are not available, pallets can be loaded onto the aircraft with bare tines. The 10K can be loaded on the C-5, C-17, C-141, and C-130. The 10K must be placed within specified locations on C-130 and C-141 aircraft. It also requires the use of sleeper shoring and removal of the cab for shipment.
2. On some 10K AT forklifts, the counterweights must also be removed prior to air shipment.

5.3.3.3. The 10/13K-pound capacity A/T forklift may be used as a prime mover to load and offload rolling stock within the aircraft, with the following restrictions:

5.3.3.3.1. Forklift limitations and aircraft limitations must not be exceeded.

5.3.3.3.2. Maximum speed on aircraft ramp and cargo floor is 3 MPH.

5.3.3.3.3. 10K Standard forklifts will not be used as prime movers.

MATERIALS HANDLING EQUIPMENT

Figure 5.3. 10/13 K Adverse Terrain Forklift

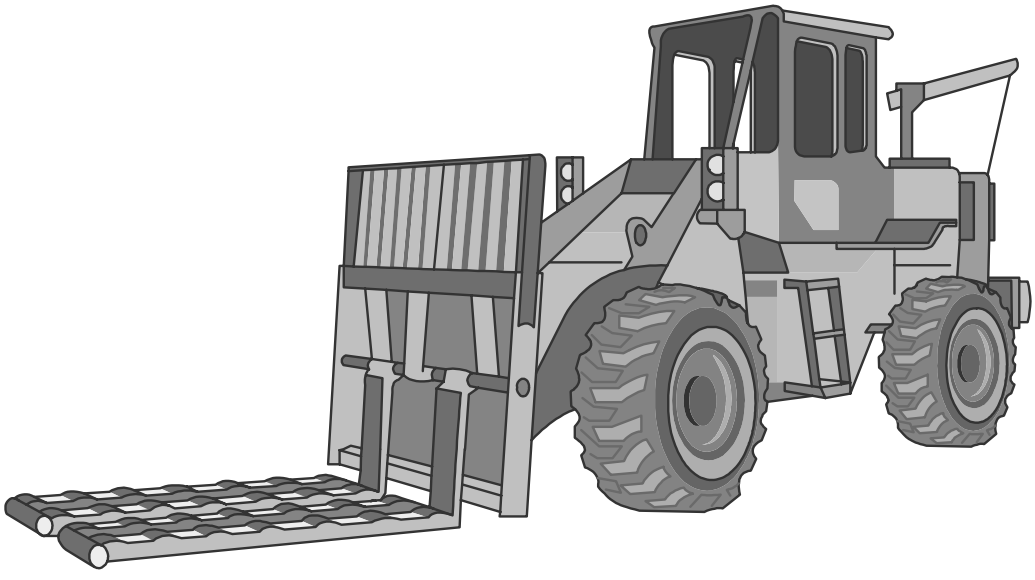


Figure 5.4. 10K Adverse Terrain Forklift (John Deere)

MATERIALS HANDLING EQUIPMENT

5.3.4. Tine (Fork) Extenders. Tine extenders are designed in two configurations; bare tine extenders and rollerized tine extenders. They are used to lengthen the forklift tines. Forklift tines must be at least 72 inches long for use with 463L pallets. Tine extenders provide this additional length. Either type of extender is acceptable. (See Figures 5.5 and 5.6)

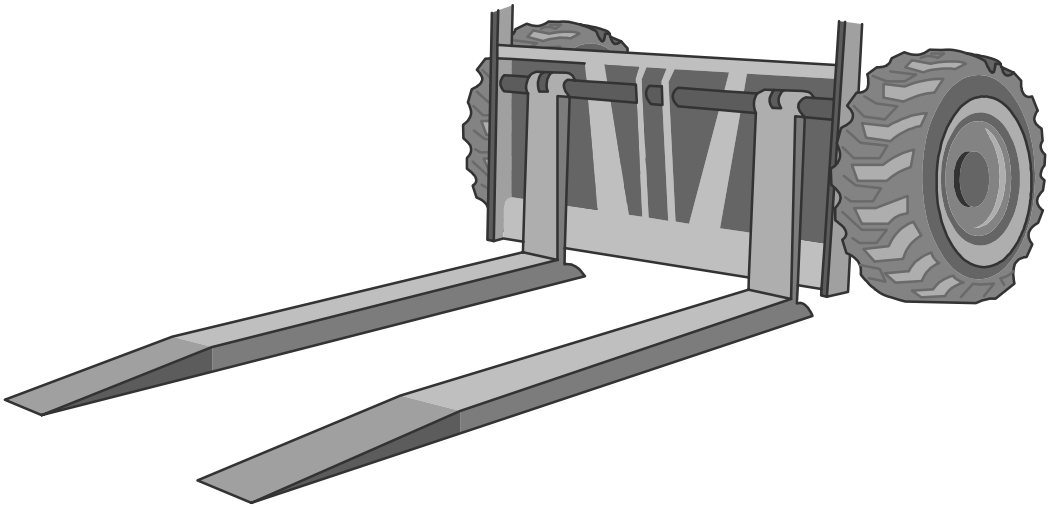


Figure 5.5. Bare Tine Extenders

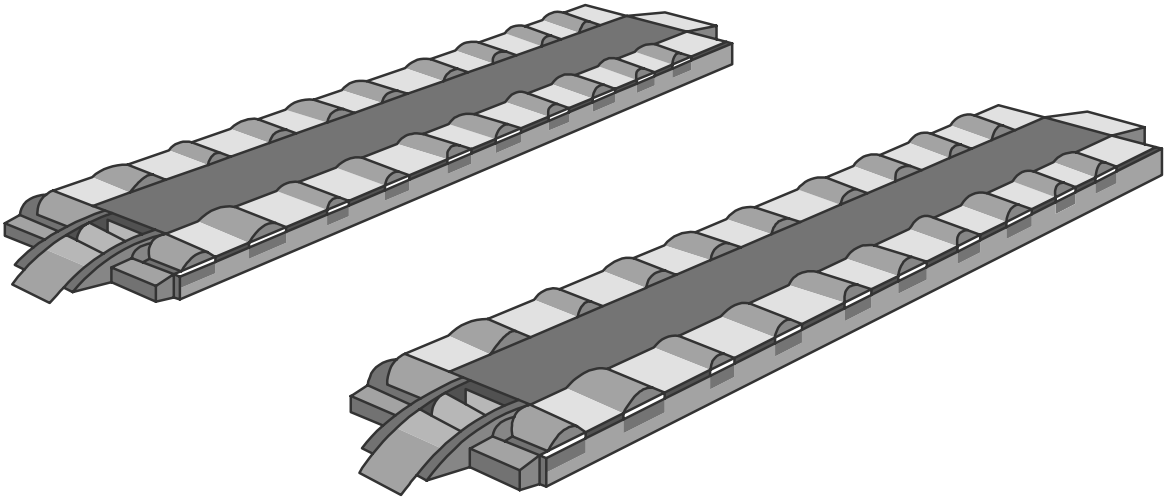


Figure 5.6. Rollerized Tine Extenders

5.4. K-loaders. K-loaders provide the capability to rapidly onload and offload 463L pallets from airlift aircraft. There are four types of K-loaders with their own capabilities, limitations, and common features. Their quantity and availability is limited. All are large and heavy, and many are extremely difficult to transport. All K-loaders are part of the 463L system. They are particularly useful for handling married pallets and airdrop platforms. When you anticipate the need for a K-loader, early and continuous coordination with your affiliated TALCE is essential.

MATERIALS HANDLING EQUIPMENT

5.4.1. 25K-loader (Figure 5.7). The 25K-loader is a self-propelled cargo transportation platform. It can lift and transport three 463L pallets up to a maximum cargo weight of 25,000 pounds. Its deck may be raised, lowered, tilted forward or aft permitting alignment with aircraft floors. The deck also can roll from side to side. The deck has rows of recessed rollers installed the entire length of the vehicle. These rollers are used as conveyers for palletized loads. Guide rails run the entire length of the deck to align the pallets with the aircraft rail system. Locks are installed in the rails to prevent the pallets from moving. The loader has removable safety rails and a side catwalk. Access to the deck in either the up or down position is by a telescoping ladder. The 25K-loader may be transported on the C-130, C-141B, C-17 or C-5 aircraft. The 25K-loader is capable of loading the C-130, KC-135, C-141, C-17, and C-5 aircraft.

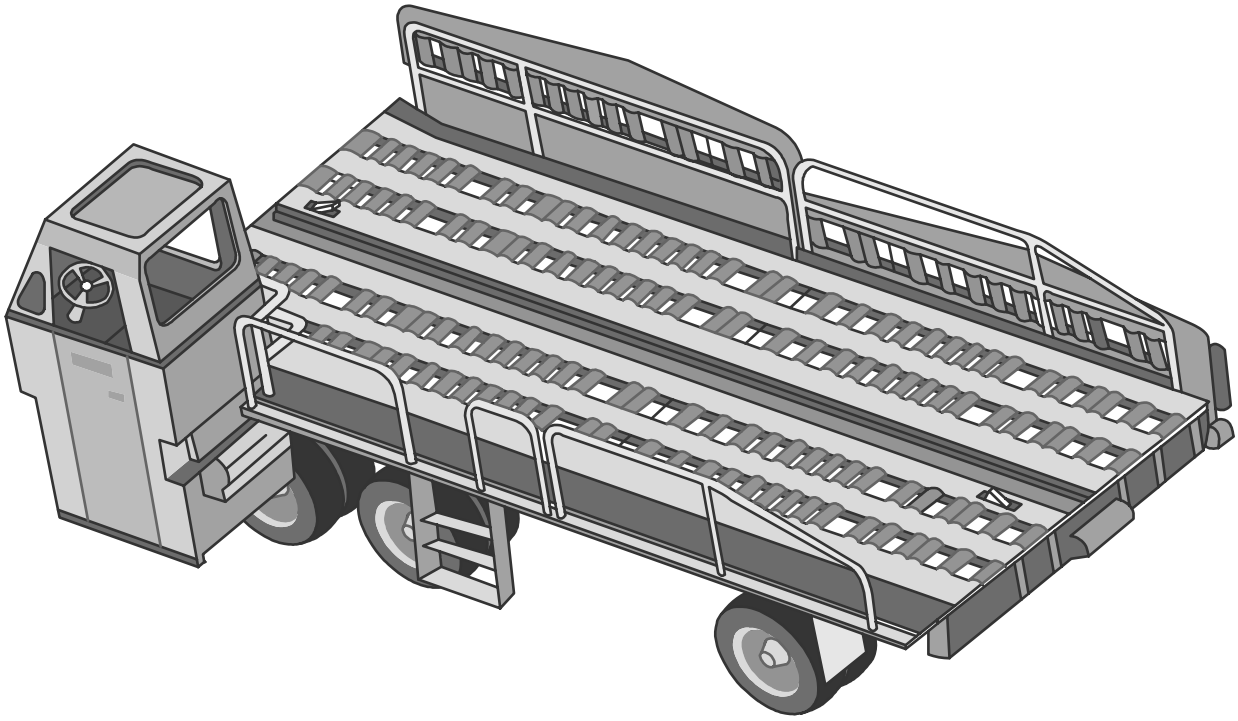


Figure 5.7. 25K Loader

5.4.2. Halversen, Next Generation Small Loader (NGSL) (Figure 5.8). The Next Generation Small Loader is a self-propelled air cargo transport/loader that supports all military cargo, and CRAF aircraft. It is also air transportable on Air Force C-130, C-141, C-5, and C-17 military aircraft. The loaders will be used to move cargo from loading areas to the aircraft as well as loading and unloading the aircraft themselves. The Halversen loader has the ability to lift and transport up to three pallets and up to 25,000 pounds. The deck can service floor heights from as low as 39 inches to 220 inches. The deck has a power convey feature and will hold three 463L pallets in either a 108 or 88 inch bias.

MATERIALS HANDLING EQUIPMENT

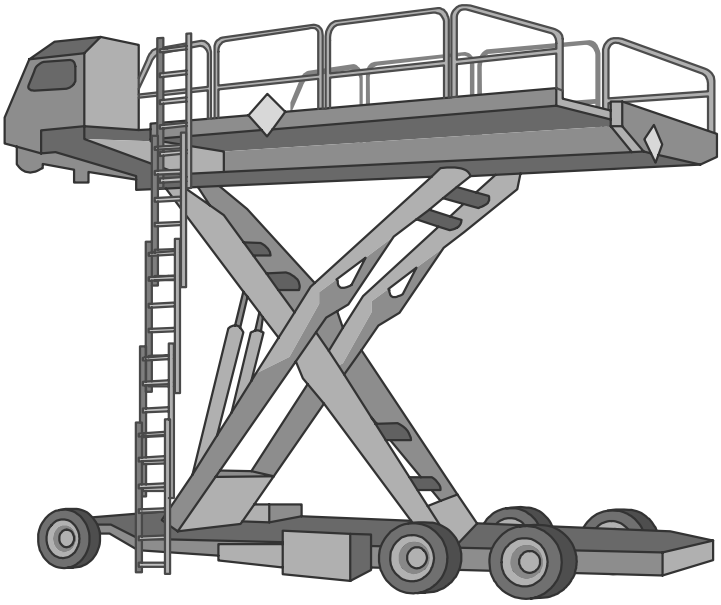


Figure 5.8. Halversen, Next Generation Small Loader

5.4.3. 40K-loader (Figure 5.9). The 40K-loaders have increased capacity over the 25K-loaders, but are not designed to be routinely transported. A 40K-loader will not fit in a C-130, poses difficulties when loaded on a C-141B, and requires special considerations when airlifted on a C-5. However, the unique design of the C-17 allows the loading of the 40K-loader without the use of a shoring kit. Additionally, due to its size, the 40K is very difficult to transport over land. Aside from these limitations, the 40K is a very efficient piece of machinery. With it you can rapidly load or offload married pallets or up to five single 463L pallets. It can lift and transport loads up to 40,000 pounds and the deck can be adjusted to match with the aircraft rail system. It is also equipped with removable safety rails, catwalks, ladder, and 463L system rails and locks. The 40K-loader is capable of loading the C-130, KC-135, C-141, C-17, and C-5 aircraft. The KC-10 can be loaded with the bed extender.

Figure 5.9. 40K Loader

MATERIALS HANDLING EQUIPMENT

5.4.4. 60K (Tunner)-loader (Figure 5.10). The 60K loaders have increased capacity over the 25K, 40K, and the Halversen, Next Generation Small Loader (NGSL). It can be used to service all military and civilian aircraft. It is air transportable on C-141, C-5, and C-17 aircraft. When airlifted it does not require the use of any shoring. The 60K loader has the ability to lift and transport up to six pallets and up to 60,000 pounds.

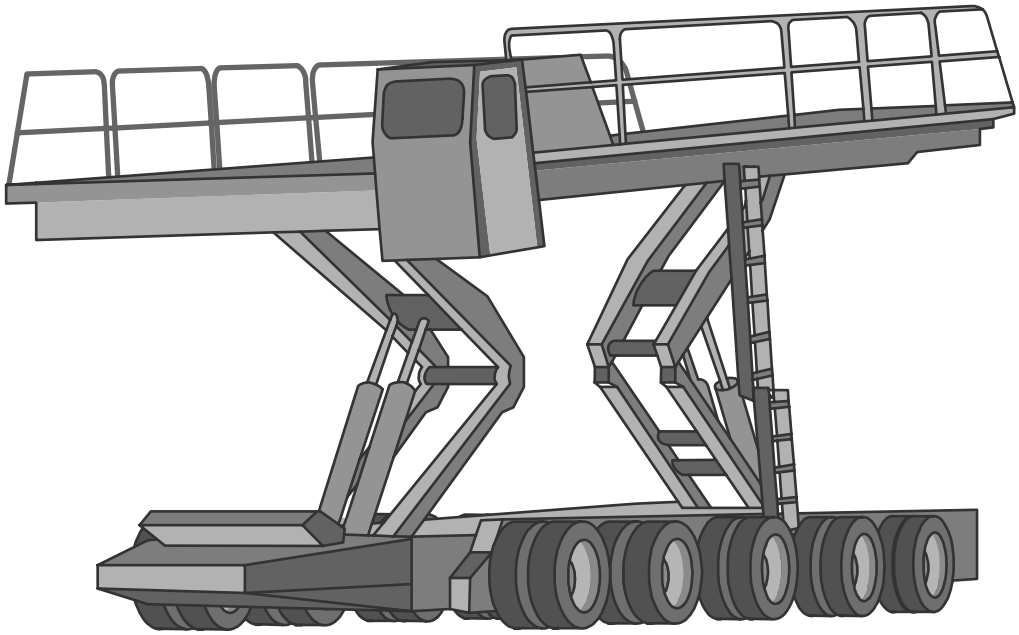


Figure 5.10. 60K (Tunner) Loader

5.5. Wide Body Loaders. With the addition of wide body cargo aircraft such as the B-747, DC-10, and KC-10, it is necessary to have MHE to load and unload them. With the exception of the 60K (Tunner) loader and the Halversen loader, the 463L K-loaders will not reach the cargo floors on these aircraft. Additionally, none of these aircraft are equipped with cargo loading ramps. Because of this, they require a wide body loader for cargo operations. There are different types of wide body loaders used by the Air Force and each is transportable by C-130, C-141, C-17 or C-5 aircraft. These loaders are shipped disassembled as a multiple pallet train and require at least one 25K-loader and one 6K forklift at both the onload and offload sites. They must then be assembled prior to loading operations. Wide body loaders cannot be used to load C-130, C-141, C-5 or C-17 aircraft. For these reasons, anytime you use a B-747, DC-10, MD-11, KC-10, or wide body aircraft for cargo transport, it is imperative you contact your affiliated TALCE. Special arrangements must be made for the transport and use of a wide body loader. Additionally, wide-body loading operations are more time consuming than military airlift aircraft cargo operations.

MATERIALS HANDLING EQUIPMENT

5.5.1. 316A Cochran Loader (Figure 5.11). The 316A loader is a loader built to accommodate commercial type, wide-body cargo aircraft. It was the first of the wide body loaders purchased by the military and is currently used extensively in direct support of the KC-10. The 316A can lift 25,000 pounds and accommodate two 463L pallets. The 316A is an elevator type loader and will not be used to transport cargo along horizontal surfaces. This restriction applies to all wide body loaders. All cargo must be placed on the 316A at the aircraft and then raised to the aircraft cargo compartment. The 316A loaders have been modified to mate with C-141B auxiliary loading ramps for loading wheeled items of cargo (See Figure 5.11).

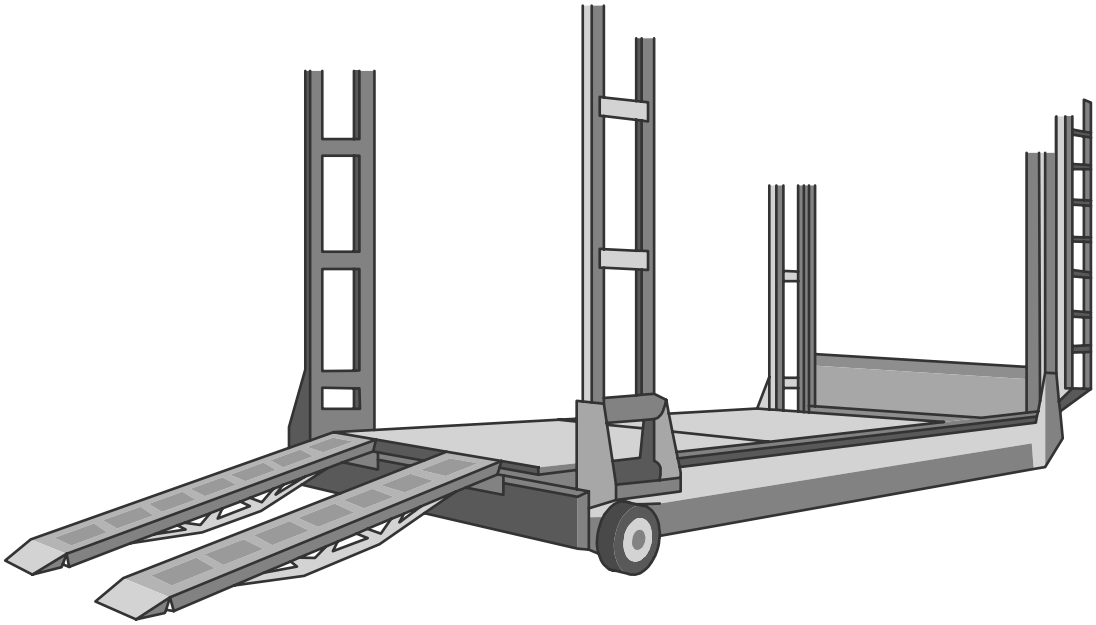


Figure 5.11. 316A Cochran Loader with C-141B Auxiliary Loading Ramps.

MATERIALS HANDLING EQUIPMENT

5.5.2. 316E Cochran Loader. The 316E loader is an advanced version of the 316A and has increased capabilities. It is very similar in appearance and operation to the 316A loader. All the requirements for the 316E's shipment and support are the same as the 316A. The 316E loader is capable of lifting 40,000 pounds of cargo and will accommodate three 463L pallets. The 316E is the most commonly used of all the wide body loaders and is located at most major AMC bases. (See Figure 5.12)

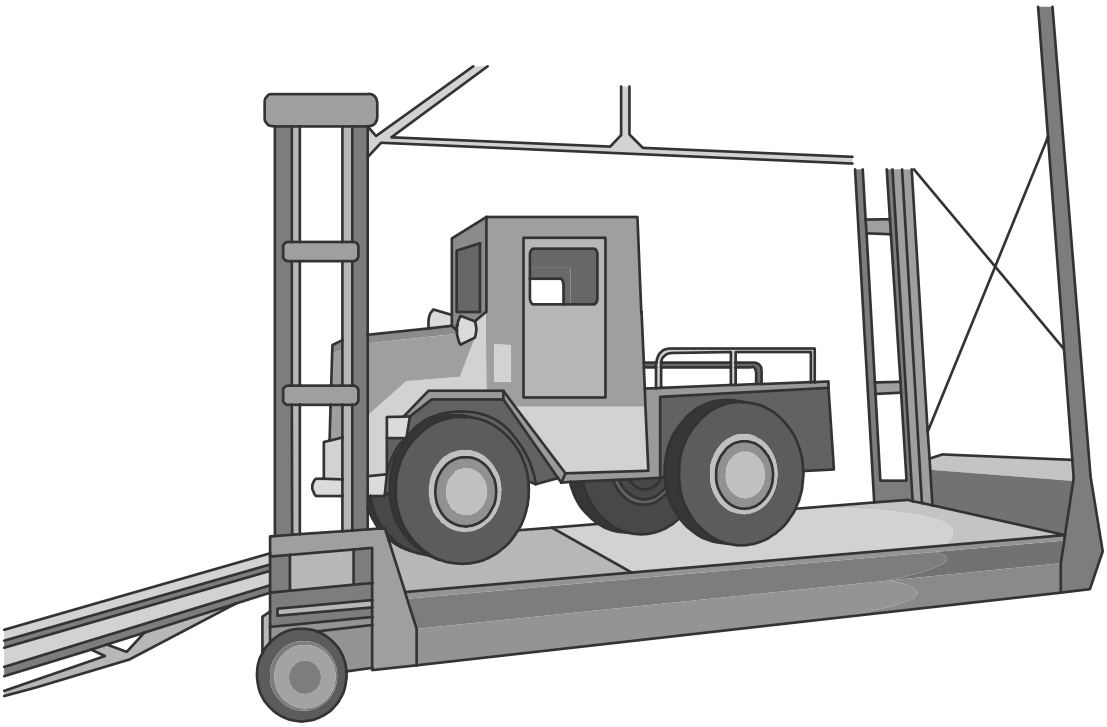


Figure 5.12. 316E Cochran Loader, Loading Rolling Stock

MATERIALS HANDLING EQUIPMENT

5.5.3. CL-3 Wilson Loader (Figure 5.13). It can lift 40,000 pounds and will hold three 463L pallets.

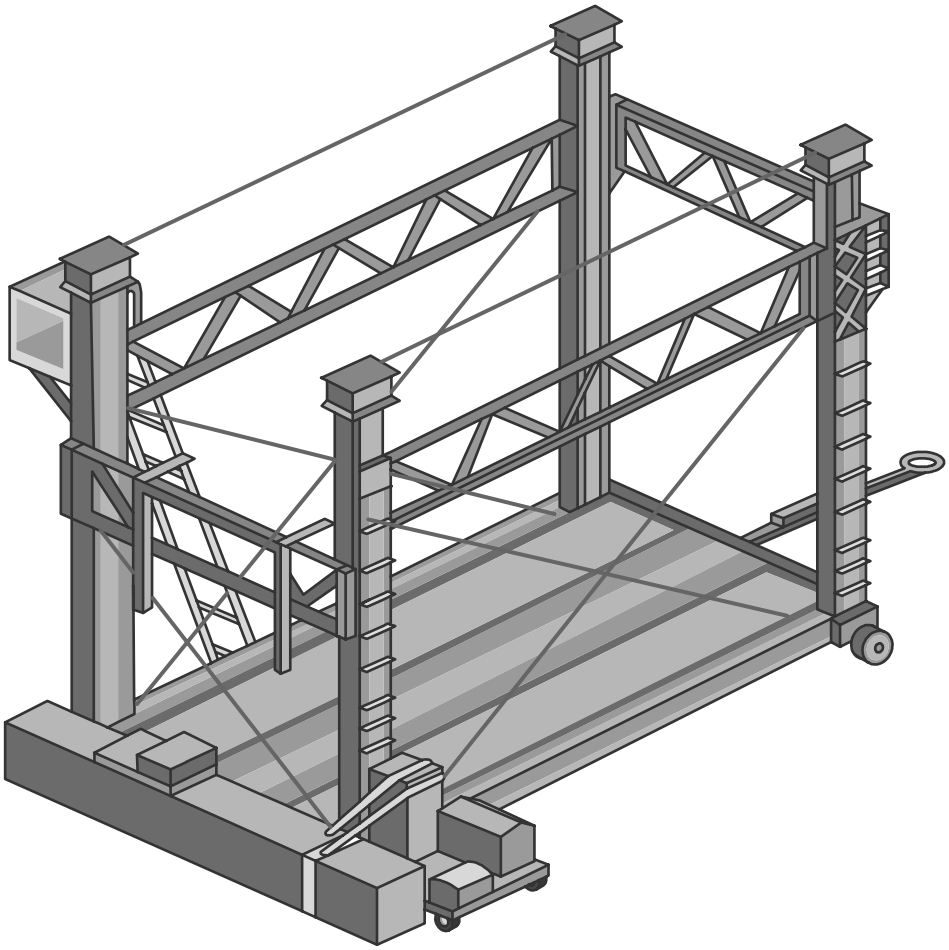


Figure 5.13. CL-3 Wilson Loader

5.6. Pusher Vehicles. (Figure 5.14) A pusher vehicle is any vehicle modified with a front mounted pintle hook. These vehicles aid dramatically in loading trailers on military cargo aircraft. Pusher vehicles allow the driver a direct view of the trailer as it moves into the aircraft. This is quicker and safer than having the driver back the trailer onto the aircraft. The best vehicles to use as pusher vehicles are M-Series vehicles or the MHE 237, US Marine Corps 4K RT forklift. There is one primary restriction. **Do not exceed the pusher vehicle's cargo capacity.** This ensures that the trailer is always under control.

MATERIALS HANDLING EQUIPMENT

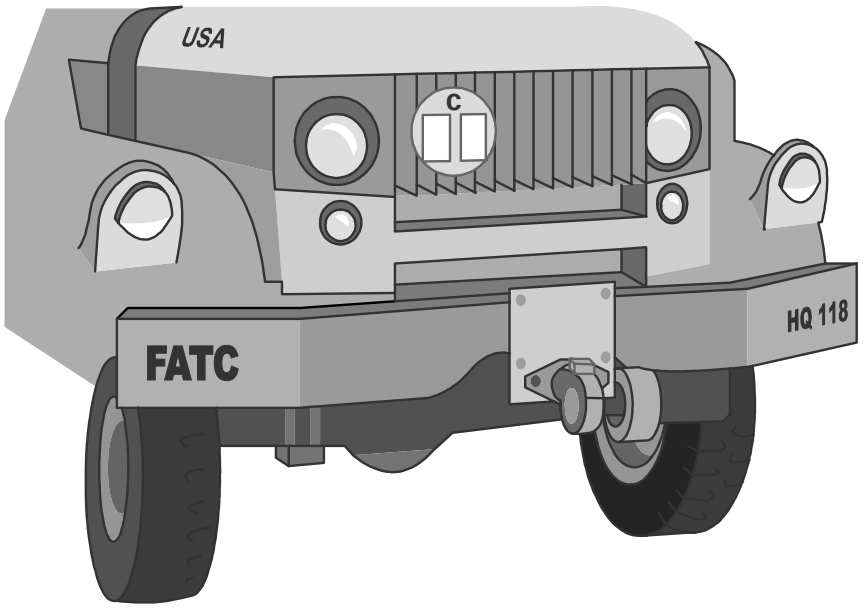


Figure 5.14. Front Mounted Pintle Hook

5.7. Rollerized Flatbed Trucks. Rollerized flatbed trucks come in a variety of sizes, lengths, and capacities. Roller conveyors can be attached to the bed to accommodate cargo build-up, transportation, and loading of 463L pallets. These flatbeds help with the speedy handling of palletized cargo, especially when K-loaders are not available (See Figure 5.15).

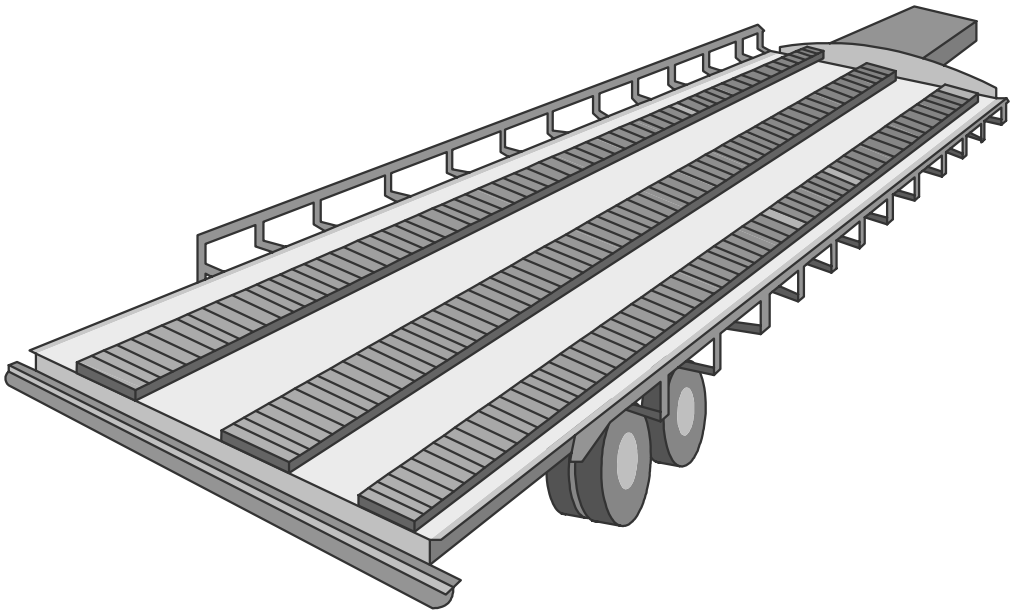


Figure 5.15. Rollerized Flatbed Truck (Typical)

MATERIALS HANDLING EQUIPMENT

5.8. Pallet Dollies. (Figure 5.16)..Pallet dollies aid in the building, transporting, storing, and loading of cargo on 463L pallets. The dollies are equipped with swivel casters or rollers to aid in pallet movement. They are used in conjunction with forklifts as a loading device. When forklifts are used with pallet dollies, rollerized tines are not required. The dollies have a tow bar and pintle hook for attaching to a towing vehicle or coupling the dollies into a train.

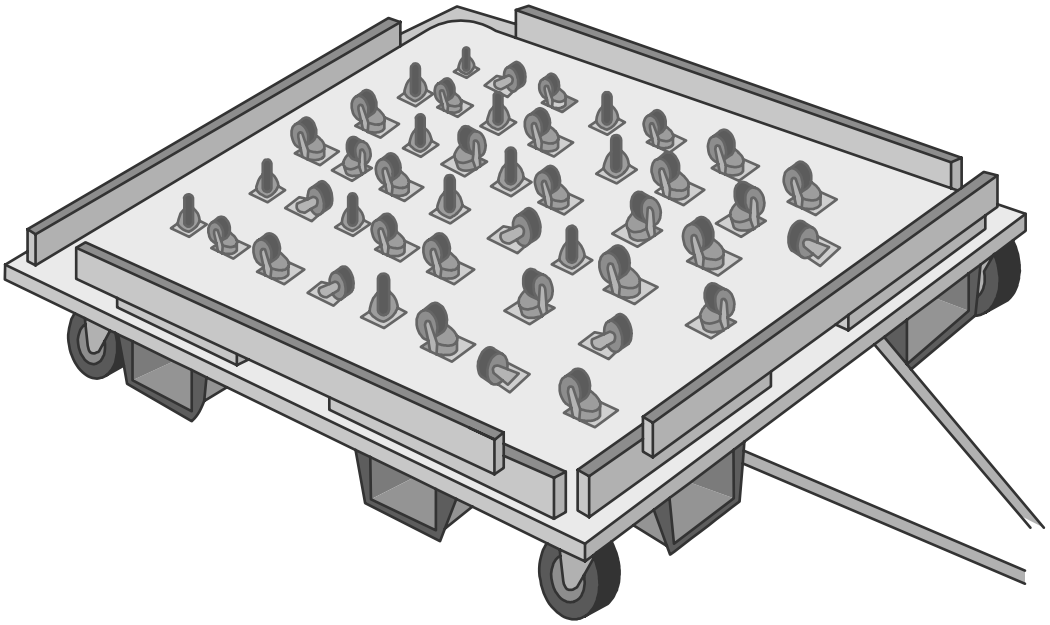


Figure 5.16. Pallet Dollies

5.9. Portable Stairs. Portable stairs are used to load passengers and crew aboard civilian or military passenger carrying aircraft. There are several types and models of stairs and extenders. As with many of the items discussed in this chapter, close coordination with your affiliated TALCE is required to obtain their use.

5.9.1. 12-Foot Passenger Steps (Figure 5.17). These are the most common type of passenger stairs and are located throughout the world. They are mechanically or manually positioned and will reach a maximum height of 12 feet. This type of stair is adequate to reach the doors of the C-5, KC-135, DC-8, A-310, and B-707 aircraft. If you are working with any wide body aircraft other than a C-5, you must use a stair extender (paragraph 5.9.2) to reach the passenger door.

MATERIALS HANDLING EQUIPMENT

Figure 5.17. 12-Foot Passenger Stairs

5.9.2. Stair Extenders. (Figures 5.18 and 5.19) When the 12-foot steps are used with wide body aircraft the stair extenders are used to get the additional height needed to reach the passenger doors. The stair extenders are locally manufactured. They are four feet in height and are attached to the top of the 12-foot stairs.

5.9.3. KC-10 Stair Extender. The stair extender assembly is used at airfields where available boarding stairs do not reach the threshold of the aircraft cabin doors. This extender is 4 feet high and is carried aboard all KC-10 aircraft. When installed, the ladder assembly fills the void from the doorsill of the middle doors to the top of the stairs.

MATERIALS HANDLING EQUIPMENT

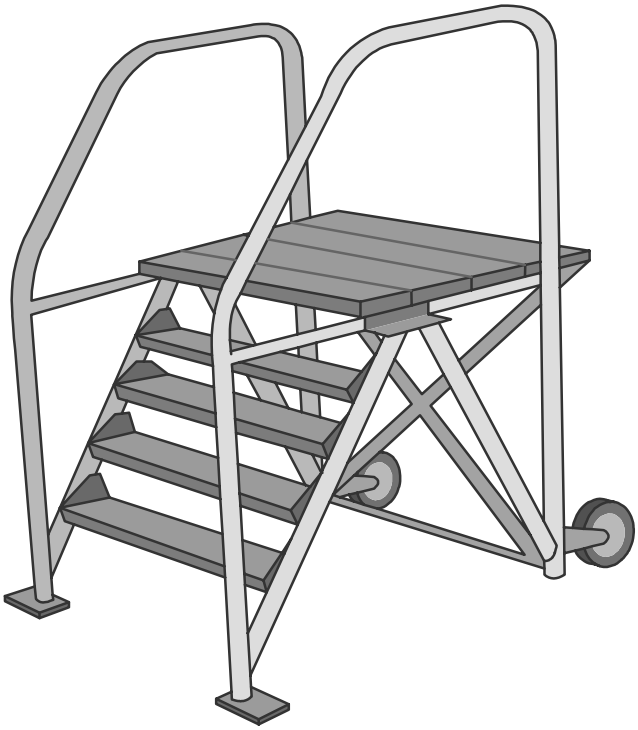


Figure 5.18. Stair Step Extenders

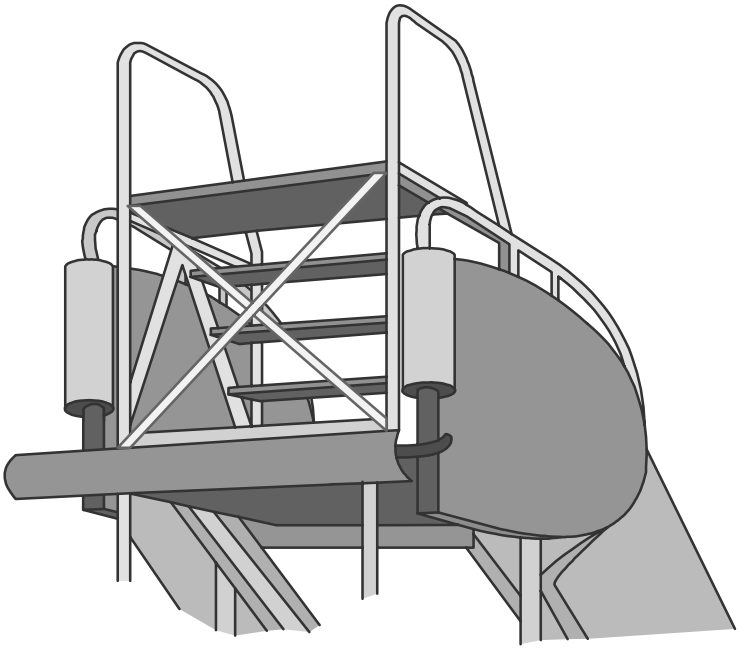


Figure 5.19. Stair Extenders (Matched to 12-Foot Passenger Stairs)

MATERIALS HANDLING EQUIPMENT

5.9.4. 17-Foot Passenger Stairs (Figure 5.20). This type of stair is self-propelled and compatible with every type of aircraft that requires passenger stairs. The stairs will extend to 17 feet. These stairs are the most mobile and are well suited for handling passengers. However, they are transportable only by surface means or on the C-17 or C-5 aircraft.

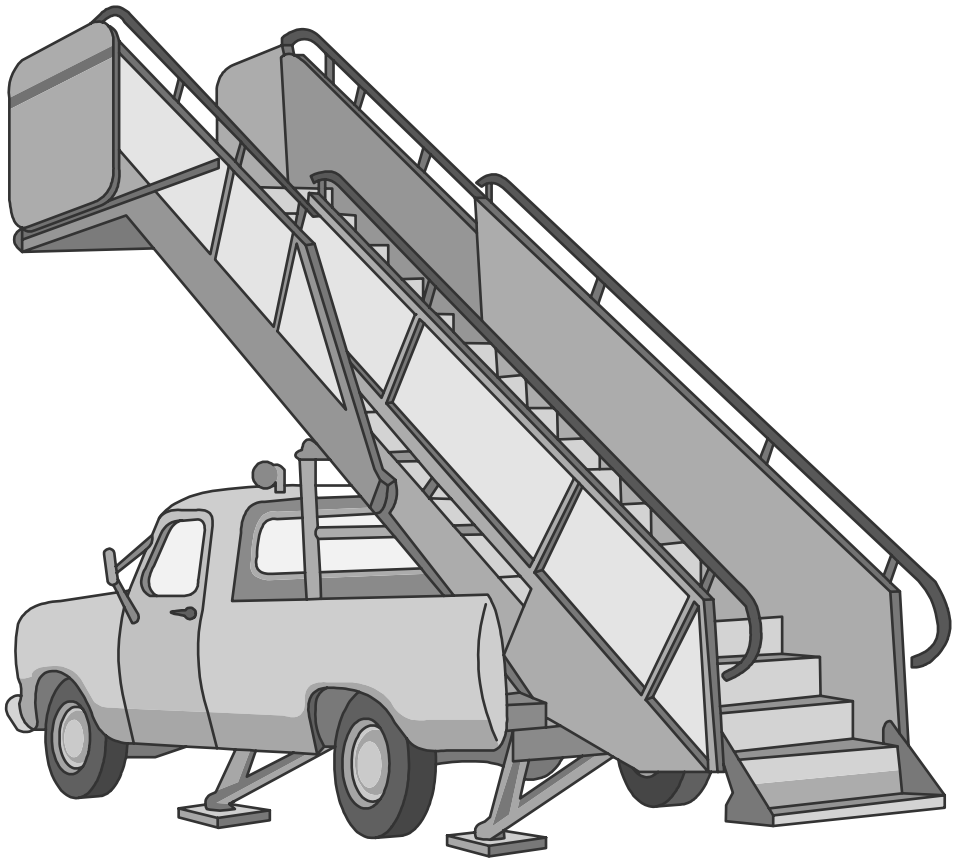


Figure 5.20. 17-Foot Passenger Stairs

MATERIALS HANDLING EQUIPMENT

Nomenclature	Maximum Lifting Capability	#Pallets able to carry	Capable of Loading	Can be Airlifted On	Additional Information
FORKLIFTS					
4K	4,000 lbs.	None			With tines removed, excellent pusher vehicle. Can be used inside military aircraft. Must not exceed particular aircraft limitations.
6K	6,000 lbs.	*			*With tine extenders, can load one 463L pallet.
10K Standard	10,000 lbs.	1	C-130, KC-135, C-141, C-17, & C-5	C-5, C-17, C-141, & C-130. Note: For C-130 & C-141, 10K Standard must be placed within specified locations.	Not to be used as a prime mover.
10/13K AT	10,000 lbs.	1	C-130, C-141, C-17, & C-5	C-5, C-17, C-141, & C-130. Note: For C-130 & C-141, 10K	Can be used as prime mover to load & unload rolling stock within an aircraft. #Must not exceed forklift or aircraft limitations.
K-LOADERS					
25K	25,000 lbs.	3	C-130, KC-135, C-141, C-17, & C-5	C-130, C-141B, C-17, & C-5	
40K	40,000 lbs.	5	C-130, KC-135, C-141, C-17, & C-5 #KC-10 can be loaded with bed extender installed.	C-141, C-5, & C-17	
60K	60,000 lbs.	6	All military & civilian aircraft.	C-141, C-5, & C-17	
Halversen	25,000 lbs.	3	All military & civilian aircraft.	C-130, C-141B, C-17, & C-5	
WIDE BODY LOADERS					25K and Forklift required for teardown/build-up of WBL's
316A Cochran	25,000 lbs.	2		C-130, C-141, C-5, & C-17	
316E Cochran	40,000 lbs.	3		C-130, C-141, C-5, & C-17	Most commonly used Cochran
CL-3 Wilson	40,000 lbs.	3		C-130, C-141, C-5, & C-17	
PORTABLE STAIRS					
12 Foot			C-5, KC-135, DC-8, & B-707		Maximum height 12'
17 Foot			Compatible with every type of aircraft requiring stairs.	C-5 & C-17	Maximum height 17'

Figure 5.21 (General MHE Information)

MATERIALS HANDLING EQUIPMENT

Chapter 5—Homework Assignment

1. Repositioning MHE from AMC and other Air Force bases to on-load locations is expensive, time consuming, and occupies a tremendous amount of available airlift cargo space. For these reasons, _____ have a responsibility (as the _____ of airlift) to provide as much MHE from local sources as possible.

2. With the tines (forks) removed and the addition of a front-mounted pintle hook, the 4K forklift makes an excellent _____ _____.

3. The 10K-standard forklift is capable of loading the _____, _____, _____, _____, and _____ aircraft.

4. The 25K-loader is a _____-_____ cargo transportation platform. It can lift and transport _____ 463L pallets up to a maximum cargo weight of 25,000 pounds.

5. 17-Foot Passenger Stairs: These stairs are the most mobile and are well suited for handling passengers. However, they are transportable only by _____ _____ or on the _____ or _____ aircraft.

MATERIALS HANDLING EQUIPMENT

SHORING

chapter
6
AMC

Lesson Objective: The objective of this lesson is for each student to comprehend how to use shoring to prevent exceeding any aircraft limitations.

References: DOD 4500.9-R Defense Transportation Regulation Part III, Mobility (DTR)

Web Pages:

Learning Activities:

1. General
2. Load spreading
3. Shoring Categories
4. Dunnage

Test Objectives:

1. Distinguish between the different types of shoring
2. Describe each of the four categories of shoring
3. Explain the reason for selecting the appropriate type of shoring for any cargo offered for shipment

SHORING

6.1. General. Your unit is responsible for providing shoring. The shoring serves many purposes. It protects the aircraft cargo floor and 463L pallet surfaces. It decreases the approach angle of the aircraft cargo ramps, protects aircraft parking ramps, and increases cargo contact areas. This chapter explains the different types, usage, and applications of shoring. Contact your affiliated TALCE if you are unsure about shoring requirements.

6.2. Load Spreading. Load spreading is a physical process that distributes a concentrated weight over a larger area. This weight exerts a certain amount of pressure determined by its supporting contact area. By using shoring, the contact area can be increased at a 45-degree angle from the upper surface of the shoring to the cargo floor. This increased contact area decreases the pressure on the floor allowing us to carry an otherwise prohibited piece of cargo. It is important to note that shoring will only increase the area of contact by an amount approximately equal to the shoring thickness on all sides of the object it supports. It will not increase the pounds per square inch (PSI) limitations.

EXAMPLE: A piece of two-inch thick shoring increases the area of contact by two inches on all sides of the item resting on it, not to exceed the dimension of the shoring. The spreading effect of shoring remains the same regardless of the shape of the supported item.

6.3. Shoring Categories. There are four categories of shoring. Each category has its own specifications, requirements, and applications, and will be discussed separately.

6.3.1. Rolling Shoring (Figure 6.1). Use rolling shoring to protect the aircraft parking ramp, and the cargo floor and loading ramps of cargo airplanes from damage when transporting a vehicle across it. Most vehicles shipped by air do not exceed weight limitations, and consequently, do not require rolling shoring. Vehicles with cleats, studs, or other gripping devices and treads that allow concentrated contact require rolling shoring. Cleated or lugged wheels can easily cause damage to the aircraft floor or soft surfaces. The total weight of the vehicle is transferred to the small, concentrated, contact area of the cleats or lugs. Vehicles that have concentrated contacts require rolling shoring thick enough to prevent damage to the cargo floor. In all cases, the minimum thickness is ¾ inch.

SHORING

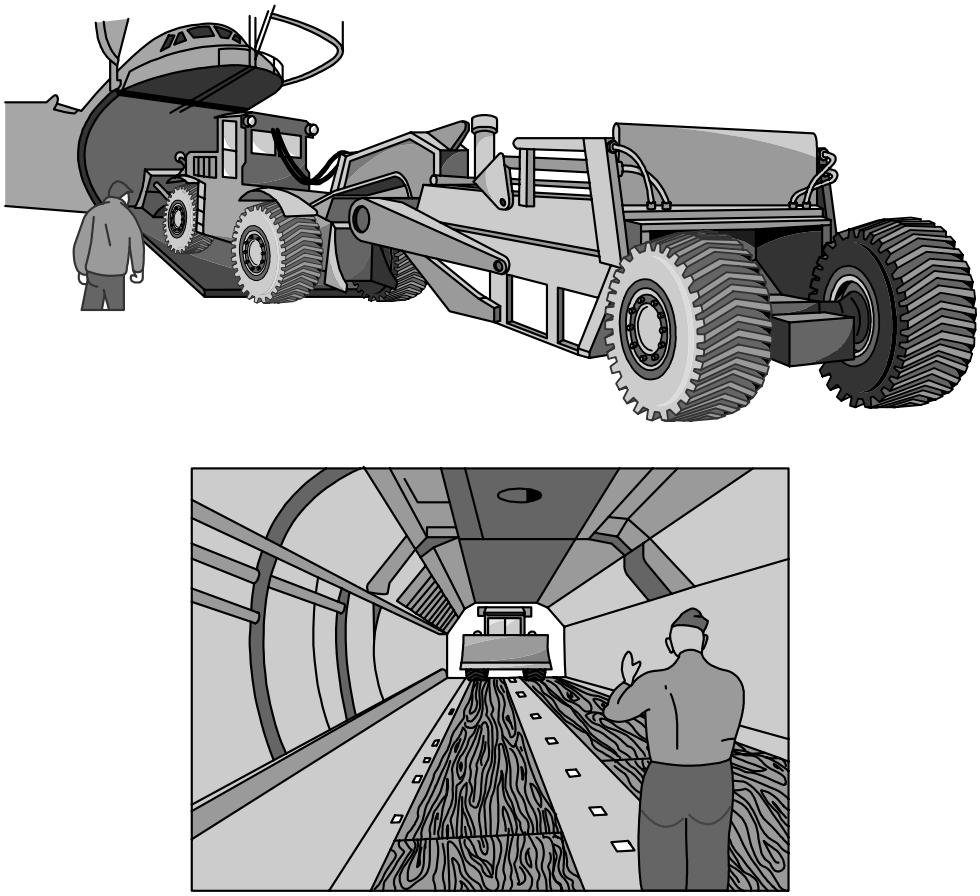


Figure 6.1. Rolling Shoring

6.3.2. Parking Shoring (figures 6.2 through 6.6). Use parking shoring to protect the aircraft floor from damage during flight. Any vehicle requiring rolling shoring also requires parking shoring. Each aircraft has specific floor weight limitations that apply to wheeled and non-wheeled items of cargo. If the vehicle exceeds these weight limitations, you must provide parking shoring before the item can be transported by air. There is no need for you to learn the mathematical processes required to calculate shoring requirements. But, here are some general considerations regarding parking shoring you may want to remember when planning an airlift movement:

6.3.2.1. The minimum thickness of parking shoring is ¾ inch.

6.3.2.2. Use parking shoring to protect the aircraft floor or ramps from contact such as blades, buckets, fork-lift tines, steel wheels, trailer tongue supports, etc. All trailers with a tongue that could rest on the aircraft floor should be shipped with parking shoring, whether connected to or disconnected from its prime mover.

SHORING

6.3.2.3. Most pneumatic tires do not normally require parking shoring. The ones that do are usually narrow and/or very heavy.

6.3.2.4. Always use parking shoring when rolling shoring is used.

6.3.2.5. Always use parking shoring on 463L pallets when you load items that have sharp edges or protrusions that could damage the pallet's aluminum surface.

Note: Contact your affiliated TALCE for guidance about specific vehicle or aircraft limitations.

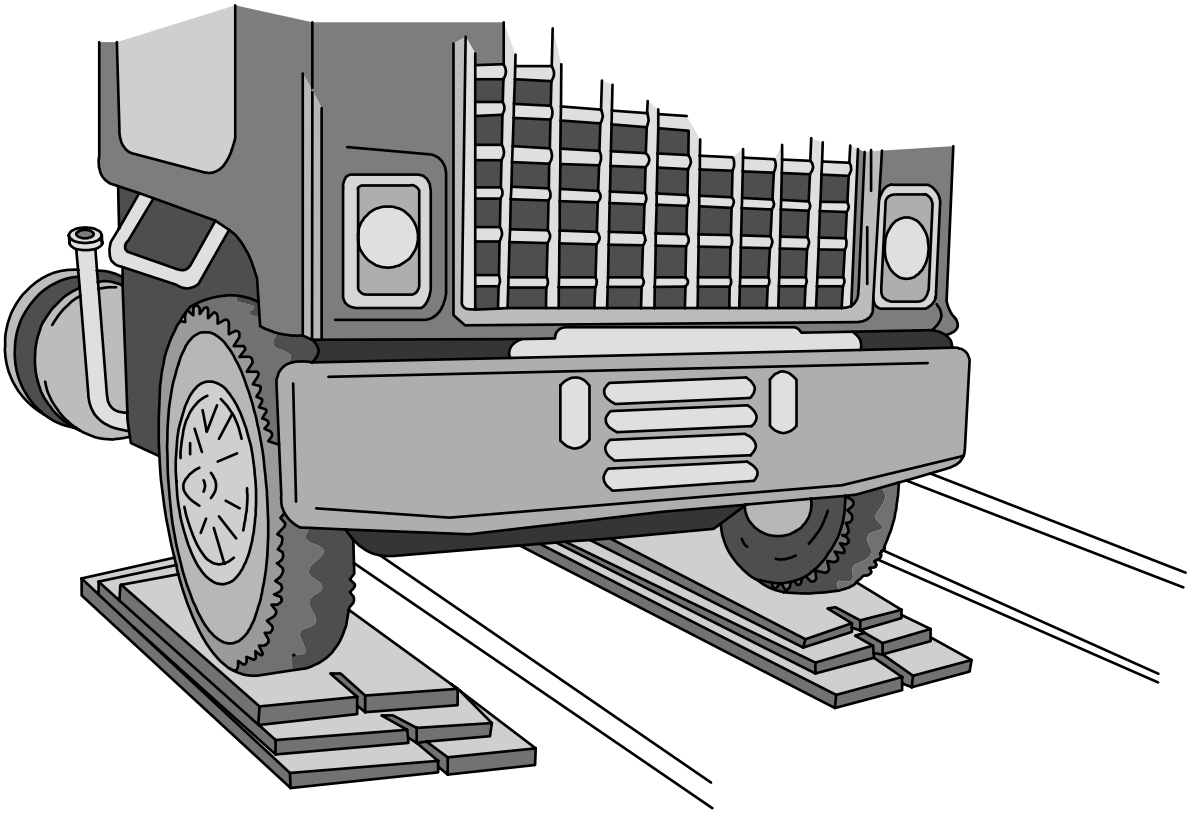


Figure 6.2. Parking Shoring (Pneumatic Tires)

SHORING

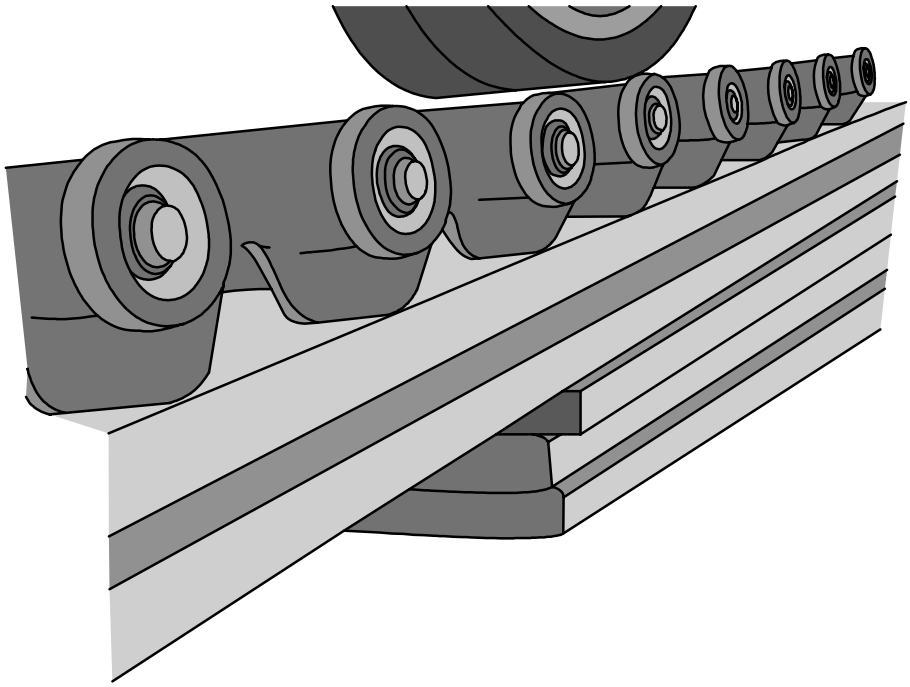


Figure 6.3. Parking Shoring (Tracked)

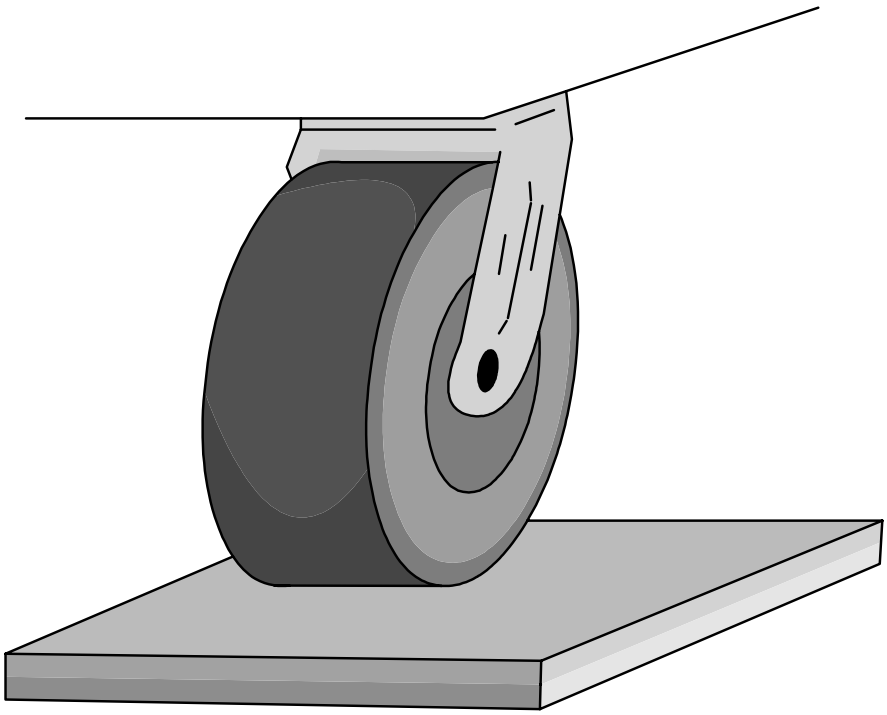


Figure 6.4. Parking Shoring (Steel Wheel)

SHORING

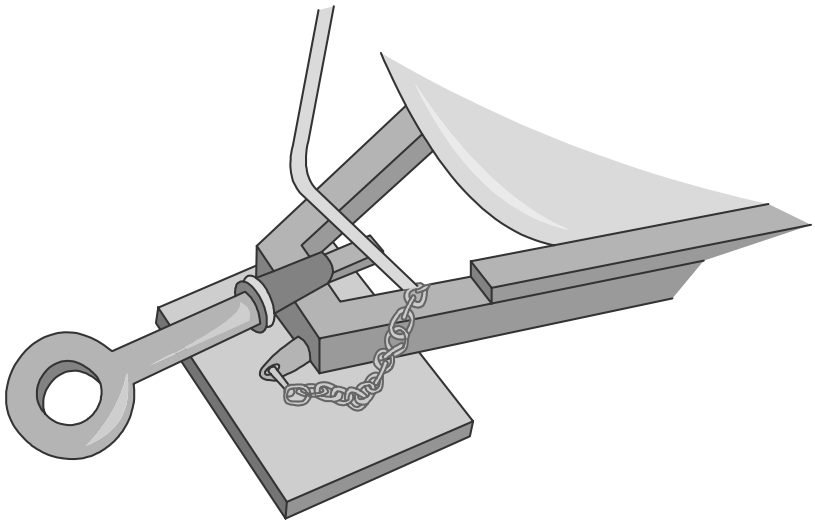


Figure 6.5. Parking Shoring (Trailer Tongue)

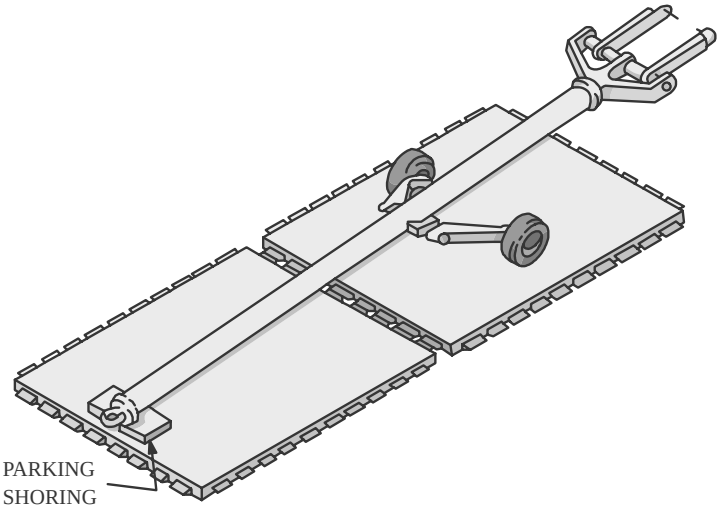


Figure 6.6. Parking Shoring (463LPallet)

6.3.3. Sleeper shoring (figure 6.7). Use sleeper shoring under the frame or axles of vehicles that weigh over 20,000 pounds and are equipped with soft, low pressure, balloon-type, off road tires. Use sleeper shoring to prevent the vehicle from bouncing up and down and possibly pulling the tiedown rings out of the aircraft floor. The base of the sleeper shoring (area contacting the aircraft floor) must be large enough to support the entire weight of the vehicle it's beneath without exceeding the P.S.I. limitation of the aircraft floor.

Note: P.S.I limitations are variable depending on the type aircraft and location within that aircraft. Contact your affiliated TALCE for specific guidance if constructing prefabricated sleeper-shoring kits.

SHORING

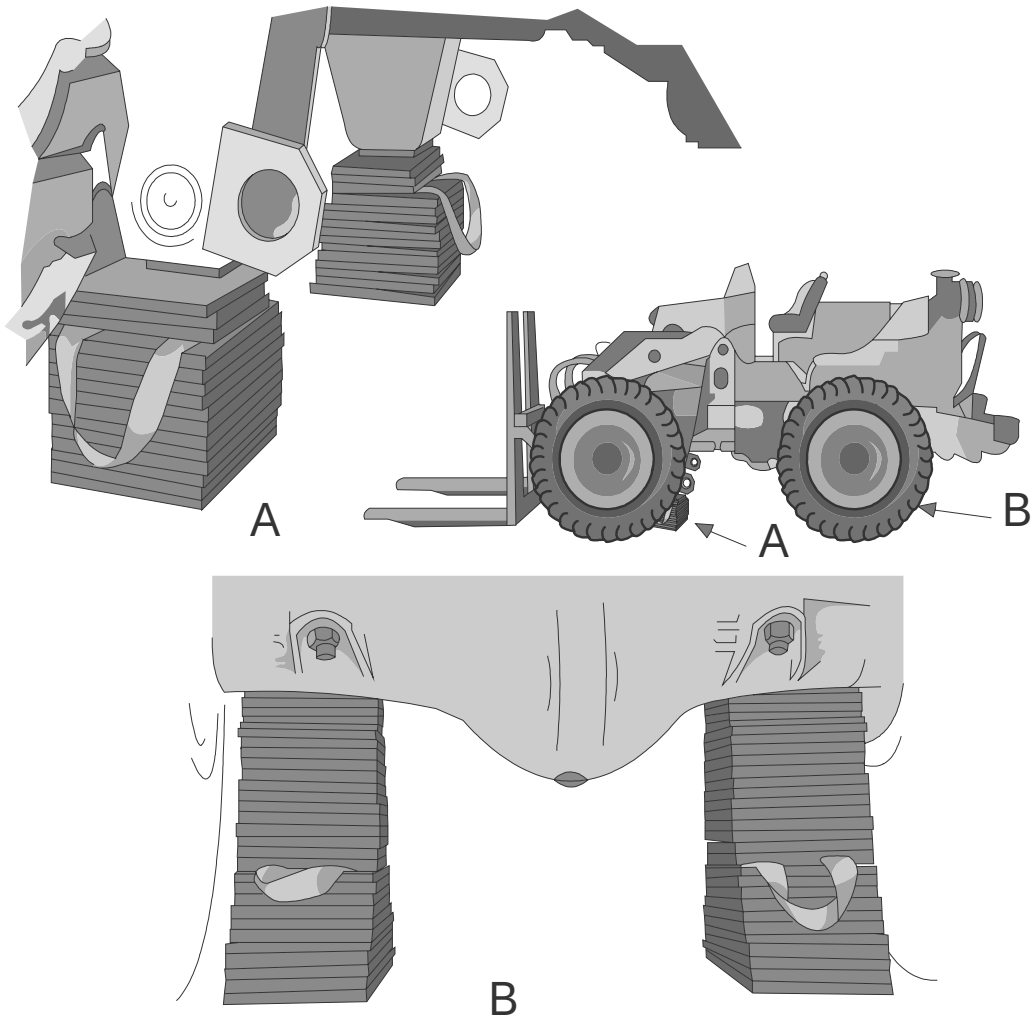


Figure 6.7. Sleeper Shoring

6.3.4. Special Shoring. Special shoring is shoring that does not belong in the other categories. Although there are other types of special shoring we will discuss approach shoring and dunnage.

6.3.4.1. Approach Shoring (figure 6.8). Approach shoring has a specific application. Use approach shoring to decrease the approach angle of aircraft loading ramps. This is because some items of cargo will strike the aircraft or ground during loading/offloading operations. Extremely tall and long items may also contact the top of the aircraft cargo compartment without a reduced approach angle provided by approach shoring. Although there is no standard method for the user to calculate when and how much approach shoring to use, most helicopters, all 40K-loaders, and many long vehicles with limited ground clearance will require approach shoring.

SHORING

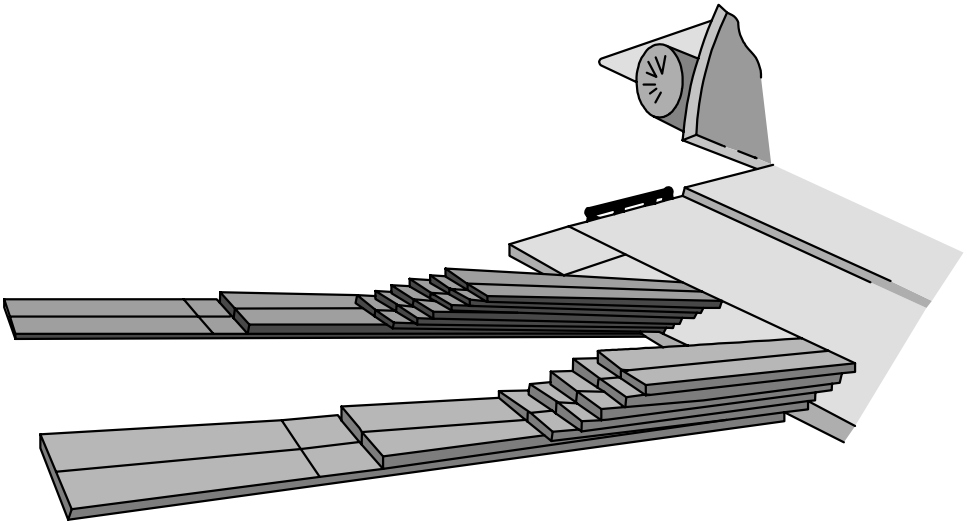


Figure 6.8. Approach Shoring

6.4. Dunnage. Always put adequate dunnage under 463L pallets. (Fig. 6.9.) This will aid in the movement of the pallets and protect the lower surface from damage. Dunnage is normally lumber or timbers placed under 463L pallets to prevent damage to the lower pallet surface and to aid in transportation with a forklift. The minimum dimensions of each piece of dunnage are 4” X 4” X 88” long. Use three pieces to support each loaded 463L pallet while on the ground. Just about any kind of material can be used as dunnage. However, wood is the cheapest and most readily available type.

NOTE: All pallets are required to be shipped with dunnage. This is required for both deployment and redeployment and **must be provided by the user.**

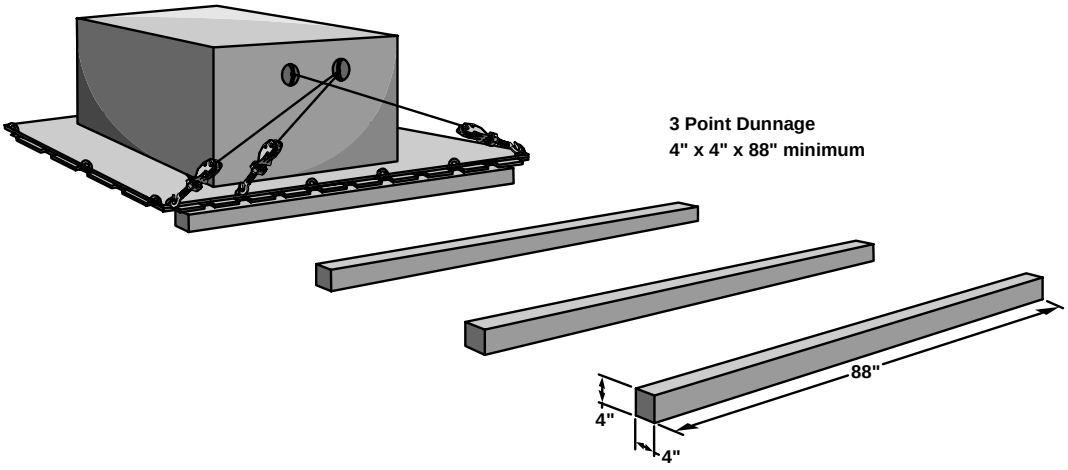


Figure 6.9. Dunnage

SHORING

Chapter 6—Homework Assignment

1. _____ _____ is responsible for providing shoring.

2. Use rolling shoring to protect the aircraft _____ _____, and the _____ _____ and loading ramps of cargo airplanes from damage when transporting a vehicle across it.

3. Use _____ shoring to protect the aircraft floor from damage during flight.

4. Use sleeper shoring under the frame or axles of vehicles that weigh over _____ pounds and are equipped with _____, _____ _____, balloon-type, off road tires.

5. All pallets are required to be shipped with _____. This is required for both deployment and redeployment and _____ be provided by the _____.

SHORING

CARGO PREPARATION AND JOINT INSPECTION

chapter
7
AMC

Lesson Objective: The objective of this lesson is for each student to comprehend how to properly prepare and inspect cargo for shipment on AMC aircraft.

References: DOD 4500.9-R Defense Transportation Regulation Part III, Mobility (DTR)

Web Pages: https:/amc.scott.af.mil/pubs/amcforms.htm

Learning Activities:

1. Responsibilities
2. Inspection Procedures
3. DD Form 2133

Test Objectives:

1. Explain how to properly prepare equipment for air movement
2. Summarize the roles and responsibilities of the TALCE's and MST's
3. Give examples on how to properly use the DD Form 2133 when inspecting cargo

CARGO PREPARATION AND JOINT INSPECTION

7.1. This chapter outlines the responsibilities, procedures, and requirements for preparation and inspection of cargo offered for air shipment. (For channel moves refer to AFMAN 24-204, TM 38-250, MCO P4030.19F, NAVSUP PUB 505, DLAM 4145.3, Preparing Hazardous Materials for Military Air Shipment).

7.2. Cargo Preparation. All equipment must be properly prepared and documented before it can be loaded on any aircraft. Listed below are some of the factors you must consider when preparing equipment for air shipment.

7.2.1. Cleaning. Before loading, all vehicles, pallets, and general cargo will be cleaned. This includes insects, dirt, oil, and grease.

7.2.2. Reduction of Vehicles and Equipment. (To include secondary loads) Vehicles and general equipment transported in C-141B aircraft will be reduced in height to 103 inches or less. Vehicles and general equipment transported in C-130 aircraft will be reduced in height to 102 inches or less. Items planned for the KC-10 will be reduced in height to 96 inches. See Chapters 5, 7 and 8 of AMC Affiliation Workbook 36-101 Vol. II for C-5, KC-135 and C-17 limitations. Cargo exceeding these dimensions must be brought to the attention of TALCE or MST personnel. They will determine whether or not the cargo can be loaded.

7.2.3. Secondary Loads/Filler Cargo. Cargo may be carried in the bed of vehicles under the following conditions (See DOD 4500.9-R Defense Transportation Regulation Part III, Mobility (DTR)):

7.2.3.1. Secure the cargo in the vehicle bed by restraining it to the vehicle body or chassis, or to the aircraft floor.

7.2.3.2. The restraint (tie-down) criteria for the secondary load is at least the same as for the vehicle itself, 3 G's forward, 1 ½ G's left, right and aft, and 2 G's vertical. (Only 1 ½ G's forward restraint required on KC-10)

7.2.3.3. Secondary Cargo Loading. After removal of the bows and stack from the vehicle, stow the bows and stack in the cargo bed. Load the secondary cargo and spread the vehicle canvas over the top of the cargo, not just over the side racks. Secure the cargo with half-inch minimum diameter rope (not nylon) or approved aircraft tiedown equipment. Run sections of the rope fore and aft and side to side to the outside vehicle tiedown points. Ensure the rope secures the cargo and is not held up by the side racks. The side racks do not provide adequate restraint. The weight of the vehicle plus any secondary cargo must be accurately determined. After securing any secondary load in the vehicle's cargo bed, weigh the vehicle and compute the vehicle CB. Once weighed, do not add or remove any cargo. If the load is changed in any way, it must be weighed again. (See chapter 4 for weighing and marking procedures)

7.2.4. Palletized Cargo. Pallet weights must not exceed aircraft limitations. Pallet heights and shapes should conform to the type aircraft planned. (See chapter 3 for specific palletization criteria.)

CARGO PREPARATION AND JOINT INSPECTION

7.2.5. Hazardous Materials. All hazardous materials offered for air shipment must be packaged and handled in strict compliance with AFMAN 24-204, TM 38-250, MCO P4030.19F, NAVSUP PUB 505, DLAM 4145.3, Preparing Hazardous Materials for Military Air Shipment. Almost any item can be airlifted in support of operations or contingencies. However, all cargo must be identified and properly packaged, marked, and handled. The Shipper's Declaration for Dangerous Goods (see figure 7.1) will be used for certification of hazardous materials. The DD Form 2133 (see figure 7.2) will be used to annotate that hazardous materials have been inspected and all associated Hazardous Material paperwork is complete prior to passing the Joint Inspection. The DD Form 1387-2 (see figure 7.3) will be utilized for a custody receipt for "special handling" materials.

CARGO PREPARATION AND JOINT INSPECTION

SHIPPER'S DECLARATION FOR DANGEROUS GOODS

Shipper	Air Waybill No. Page of Pages Shipper's Reference Number *(optional)*
Consignee	
Two completed and signed copies of this Declaration must be handed to the operator	**WARNING** **Failure to comply in all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties. This Declaration must not, in any circumstances, be completed and/or signed by a consolidator, a forwarder or an IATA cargo agent.**
TRANSPORT DETAILS This shipment is within the limitations prescribed for: *(delete non-applicable)* PASSENGER AND CARGO AIRCRAFT / CARGO AIRCRAFT ONLY Airport of Departure	
Airport of Destination:	Shipment type: *(delete non-applicable)* NON-RADIOACTIVE / RADIOACTIVE

NATURE AND QUANTITY OF DANGEROUS GOODS *(see Subsections 6.6 and 8.1 of IATA Dangerous Goods Regulations)*

Dangerous Goods Identification							
Proper Shipping Name	Class or Division	UN or ID No.	Packing Group	Subsidiary Risk	Quantity and Type of packing	Packing Inst.	Authorization

Additional Handling Information

24 hr. Emergency Contact Tel. No. _____

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.	Name/Title of Signatory Place and Date Signature *(see warning above)*

Figure 7.1. Shipper's Declaration for Dangerous Goods

CARGO PREPARATION AND JOINT INSPECTION

7.3. Joint Inspection. The joint inspection (JI) is recorded on DD Form 2133, Joint Airlift Inspection Record. An example of this form is depicted in figure 7.2. You may wish to refer to this figure as you learn about joint inspection.
https:/amc.scott.af.mil/pubs/amcforms.htm

JOINT AIRLIFT INSPECTION RECORD *(See Instructions on back.)*												**PAGE OF PAGES**
1. UNIT BEING AIRLIFTED			**2. DEPARTURE AIRFIELD**									**3. DATE** *(YYYYMMDD)*
4. AIRCRAFT TYPE AND MISSION NUMBER		**5. LOAD/CHALK NO.**			**6. START TIME**			**7. COMPETE TIME**				**8. TALCE/CDF**
LEGEND *(Mark blocks after each item as follows)* ✓ **= SATISFACTORY** X **= UNSATISFACTORY** IF NOT APPLICABLE, LEAVE BLANK	**INCREMENT/SERIAL/BUMPER NUMBER AND TYPE**											
A. DOCUMENTATION												
9. MANIFESTS/LOAD PLANS												
10. SHIPPERS DECLARATION												
11. HAZARDOUS MATERIALS PREPARATION												
12. LOAD LISTS/CARGO TRANSFER FORMS												
B. VEHICLES/NON-POWERED EQUIPMENT												
13. CLEAN												
14. FLUID LEAKS												
15. MECHANICAL CONDITION												
a. ENGINE RUNS												
b. BRAKES OPERATIONAL												
16. BATTERY												
a. SECURE - NO LEAKS												
b. POST/CABLES-PROTECTED												
17. FUEL TANK(S) LEVELS												
a. AS REQUIRED												
b. FUEL TANK CAPS INSTALLED												
18. JERRY CANS												
a. DOT 5L *(Metal)*												
b. POP *(Plastic)*												
19. DIMENSIONS *(Fits A/C Profile or Contour)*												
20. CENTER OF BALANCE *(Both Sides)*												
21. SCALE WEIGHT *(Both Sides)*												
22. AXLE WEIGHTS *(Both Sides)*												
23. TIEDOWN POINTS *(Serviceable)*												
24. PINTLE HOOKS/CLEVISES												
a. SERVICEABLE												
b. SAFETY PIN ATTACHED *(Safety Chains)*												
25. VEHICLE EQUIPMENT SECURE *(Tools, tires, etc.)*												
26. TIRE PRESSURE												
27. SHORING *(Rolling, Parking, Sleeper, Approach)*												
28. ACCOMPANYING LOAD												
a. WITHIN VEHICLE RATED CAPACITY												
b. SECURE TO VEHICLE												
29. LOX/NITROGEN CART *(Vent Kit)*												
C. PALLETS/PALLET TRAINS												
30. CLEAN												
31. SCALE WEIGHT												
32. DIMENSIONS *(Fits A/C Profile or Contour)*												
33. CARGO PROPERLY SECURED												
a. NETTED												
b. CHAINED/STRAPPED												
34. DUNNAGE *(3 Pieces Per Pallet)*												
D. HELICOPTERS *(Flyaway)*												
35. FUEL QUANTITY *(Gallons)*												
36. BATTERY *(Disconnected/Taped)*												
37. CENTER OF BALANCE *(Both Sides)*												
38. SCALE WEIGHT *(Both Sides)*												
39. SHORING *(Rolling, Parking, Approach)*												
40. SPECIAL LOADING EQUIPMENT *(Towbars, etc.)*												
41. REMARKS												
THE ABOVE LISTED ITEMS HAVE BEEN INSPECTED FOR PROPER SHIPPING CONFIGURATION.												
42. DEPLOYING FORCE REPRESENTATIVE *(Signature/Rank/Unit of Assignment)*							**43. MOBILITY FORCE INSPECTOR** *(Signature/Rank/Unit of Assignment)*					
DD FORM 2133, OCT 1998 (EG) **PREVIOUS EDITION IS OBSOLETE.**												

Figure 7.2. DD Form 2133 (sample)

CARGO PREPARATION AND JOINT INSPECTION

INSTRUCTIONS

1. RESPONSIBILITIES

1.1. Qualified TALCE/CDF or aerial port personnel are responsible for acceptance of cargo for airlift.

1.2. The deploying unit is responsible for the preparation of cargo, including weighing, marking, palletization, and the preparation of all documentation.

1.3. The joint inspection, including documentation and inspection of all items prepared for air shipment, must be accomplished prior to loading. This inspection will be performed by qualified TALCE/CDF or aerial port personnel with a representative from the transported force.

2. INSPECTION PROCEDURES

2.1. All inspections will be conducted by qualified inspectors and transported force representatives. The TALCE/CDF or aerial port representative accepting cargo for air shipment must have completed hazardous materials inspector training required by paragraph 1.17.3, AFMAN 24-204/TM 38-250/NAVSUP PUB 505/MCO P4030.19F/DLAM 4145.3. The completed form will indicate to the aircraft loadmaster that the required inspection has been accomplished.

2.2. This form will be used as the souce document for joint inspection. Three copies will be completed for each aircraft load and sign by the appropriate personnel.

(1) One signed copy will be attached to the aircraft cargo manifest.

(2) One signed copy for the TALCE/CDF or aerial port station file.

(3) One signed copy for the transported force.

3. PREPARATION INSTRUCTIONS

3.1. Heading.

(1) Block 1, Unit Being Airlifted. Enter the numerical designation and geographic location of the military unit responsible for the equipment being airlifted. For example, 1st Tactical Fighter Wing, Langley AFB VA.

(2) Block 2, Departure Airfield. Enter the name of the facility the airlifted unit is departing, i.e., Langley AFB VA.

(3) Block 3, Date. Day, month and year that the inspection is accomplished.

(4) Block 4, Aircraft Type and Mission Number. Enter the aircraft type on which the equipment is to be loaded and the airlift mission number as designated in the plan or operations order.

(5) Block 5, Load/Chalk Number. Enter the deploying force assigned aircraft load number that establishes the desired load movement sequence.

(6) Block 6, Start Time. Enter the local time that the inspection was started.

(7) Block 7, Complete Time. Enter the local time that the load was checked, and is ready for movement.

(8) Block 8, TALCE/CDF. Enter the numerical designation of the unit that has TALCE/CDF or aerial port responsibility for the operating location.

3.2. Body.

(1) Enter the increment/serial/bumper number and type of equipment in the appropriate block. The legend for completing the inspection is contained in the block on the left. Annotate the appropriate entry in the proper column. Make only one entry in each inspection block for each item.

(2) Enter items not initially accepted in the remarks section and indicate corrective action.

(3) Blocks 42 and 43. Signature must be legible. Indicate the rank and unit of assignment of the individual signing the form.

DD FORM 2133 (BACK), OCT 1998

Figure 7.2a. DD Form 2133-(reverse)

CARGO PREPARATION AND JOINT INSPECTION

ITEM NOMENCLATURE	NET QUANTITY PER PACKAGE	TRANSPORTATION CONTROL NO.
	CONSIGNMENT GROSS WEIGHT	DESTINATION

SUPPLEMENTAL INFORMATION	LOAD STORAGE GROUP
	FLASH POINT

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Dept of Transportation. THIS IS A MILITARY SHIPMENT! *(Complete applicable blocks below)*

☐	This shipment is within the limitations prescribed for PASSENGER AIRCRAFT/CARGO AIRCRAFT ONLY (Delete nonapplicable aircraft)		ATA/IATA/IMCO REGULATIONS	
☐	AFR 71-4, TM 38-250, NAVSUPPUB 505, MCO P4030.19, DLAM 4145.3, Paragraph _____	**49 cfr**	PARAGRAPH	EXEMPTION
☐	DOD 4500.32R (MILSTAMP)		173.7(a)	DOT-E 7573

ADDRESS OF SHIPPER	TYPED NAME, SIGNATURE AND DATE

DD FORM 1387-2, JUN 86 *Previous editions are obsolete.* *(Form Approved/OMB No. 0704-0188)*

SPECIAL HANDLING DATA/CERTIFICATION

Figure 7.3. DD Form 1387-2

7.4. Responsibilities. TALCEs or MSTs are responsible for approving all aircraft loads, supervising the loading, offloading, and tie-down of vehicles and cargo; and assuring compliance with applicable aircraft loading manuals. The transported unit is responsible for setting up the movement precedence, cargo preparation and troop management. This includes preparing the documentation, loading/offloading and restraining all cargo aboard Air Force aircraft. Due to joint responsibilities, it is necessary to accomplish and document final joint inspections of equipment before loading. Qualified representatives from the moving unit, DACG/MCC, and the supporting airlift representative will perform the inspection of aircraft loads. When no other Air Force personnel are available, the aircraft loadmaster or boom operator can conduct the final inspection.

7.5. Inspection Procedures. Qualified Air Force and transported force representatives will jointly conduct all final inspections. The completed form will indicate to the aircraft loadmaster that the required inspections are completed. No formal aircrew before loading inspection is required if all noted discrepancies are corrected before loading. The DD Form 2133 is used as the final joint inspection document. Three copies are completed for each aircraft load and signed by the appropriate transported force and supporting airlift personnel. All copies must be legible. Minimum distribution for the completed copies is as follows:

7.5.1. Attach the original signed copy to the aircraft cargo manifest.

7.5.2. TALCE or MST/ATOC/DACG/MCC will keep one copy for station file.

7.5.3. Transported force will keep one copy.

7.6. DD Form 2133 Preparation Procedures.

NOTE: See figure 7.2 for a description of the heading, legend and increment, serial, bumper number, type and signature blocks. DOD 4500.9-R Defense Transportation Regulation Part II, Cargo Movement (DTR) directs the use of TCN's on all cargo and equipment. Consult

CARGO PREPARATION AND JOINT INSPECTION

DOD 4500.9-R Defense Transportation Regulation Part II, Cargo Movement (DTR) for guidance in preparing TCN's for unit move cargo.

7.6.1. **Section A**—Documentation. Note: Information on filling out header section is located on reverse side of DD Form 2133, Figure 7.2a.

7.6.1.1. Item 9—Manifests/Loadplans. (7 for CONUS / 15 for OCONUS moves) Ensure completion of the required number of copies. Check the proper manifesting of the entire chalk and scale weights to match manifest weights. Ensure the load is correctly sequenced (according to manifest) and complies with all aircraft loading and safety of flight limitations.

7.6.1.2. Item 10—Shippers Declaration*. Check for proper preparation of all required hazardous cargo forms and certification according to Joint Service Publication AFMAN 24-204, TM 38-250, MCO 4030.19F, NAVSUP Pub 505, DLAM 4145.3.

***NOTE:** The DD Form 1387-2 is now used as a custody receipt for "special handling" materials. All hazardous materials will be certified using the "Shipper's Declaration for Dangerous Goods".

7.6.1.3. Item 11—Hazardous Materials Preparation. Check that all hazardous cargo in the vehicle or loaded as secondary cargo is compatible with other hazardous materials in the chalk, as restricted by AFMAN 24-204, TM 38-250, MCO 4030.19F, NAVSUP Pub 505, DLAM 4145.3. Ensure the proper preparation of all required load lists and/or custodian transfer documentation.

7.6.1.4. Item 12—Load Lists/Cargo Transfer Forms. A list of items shipped must be included in aircraft package to accompany the cargo.

7.6.2. **Section B**—Vehicles/Non-Powered Equipment:

7.6.2.1. Item 13—Clean (no dirt, trash, and pests). Clean each item of all grime, oil, dirt, etc. Steam clean if necessary. Clean all vehicle tires of rocks/pebbles embedded in the treads.

7.6.2.2. Item 14—Fluid Leaks. A loss of fluid at a rate that is readily detected or seen is a leak. Five drops or more per minute from a cooling system, crank case, or gear case is a leak. Fuel or brake system leaks, no matter how minor, will prevent air shipment. Do not consider a damp or discolored seal a leak unless any of the above conditions exist.

7.6.2.3. Item 15—Mechanical Condition:

7.6.2.3.1. Item 15a—Engine Runs. Unless a vehicle is shipped as retrograde cargo, it must be in good mechanical condition. Ensure self-propelled vehicles are operational.

7.6.2.3.2. Item 15b—Brakes Operational. Check brakes by having driver demonstrate braking capability while vehicle is moving. Check the emergency brake for operation, if installed.

CARGO PREPARATION AND JOINT INSPECTION

7.6.2.4. Item 16—Battery:

7.6.2.4.1. Item 16a—Secure no leaks. Ensure battery is correctly installed; i.e., holding clamp secure, filler caps tightly installed, battery connectors are tight, and all cables/clamps are not in contact with any grounding point during loading or flight.

7.6.2.4.2. Item 16b—Post/Cables-Protected. To secure the battery from short circuit, completely protect the terminal posts from contact (i.e. tape, rubber boots, etc.) Disconnect if necessary.

7.6.2.5. Item 17—Fuel Tank(s) Levels. (Fuel levels are maximums IAW AFMAN 24-204, TM 38-250, MCO 4030.19F, NAVSUP Pub 505, DLAM 4145.3 Chapter 3, Contingency Airlift Movements).

7.6.2.5.1. Item 17a—As Required: Vehicles and self-propelled units may be transported with fuel in tank not to exceed ¾ full. This is for units positioned on the aircraft floor. Units loaded on the aircraft cargo ramp must be positioned with fuel tank filler openings on the high side of the ramp with fuel tanks no more the ½ full. Wheeled engine-powered support equipment will not exceed ½ tank regardless of position on the aircraft. Do not exceed ½ tank of fuel for units loaded aboard aircraft with a steep angle of ascent (i.e., KC-10, KC-135). Equipment mounted on a single axle disconnected from its prime mover and loaded with its tongue resting on the aircraft floor or ramp must be drained, but need not be purged. Drain fuel tanks of palletized units. Units palletized due to the aircraft's subfloor requirements may contain fuel-in-tank.

NOTE: Vehicles loaded on the KC-10 and KC-135 will be limited to ½ tank of fuel.

NOTE: AMC periodically identifies items of cargo as "known leakers". These items must be drained and purged (if req.) regardless of positioning on aircraft and aircraft type.

7.6.2.5.2. Item 17b—Fuel tank caps installed. Ensure fuel caps are properly installed. On closed fuel system equipment, loosen caps to allow pressure equalization.

Item 18—Jerrycans.

7.6.2.6.1. Item 18a—DOT 5L (Metal). DOT 5L jerrycans are authorized for transporting flammable liquid fuel stocks in quantities, when combined with the fuel shipped in the tanks of the vehicles or equipment, which do not exceed a two full tank supply. Ensure that all racks are designed to accommodate and secure DOT 5L jerrycans to prevent movement or leakage during airlift. Jerrycans must have a serviceable gasket in place on the screw cap closure. Any leakage from or dent at the seam of a jerrycan will prohibit its acceptance for air shipment. DOT 5L jerrycans used to transport hazardous materials will not be palletized or floor loaded.

NOTE: There are no minimum fuel requirements for this container. The maximum quantity is 5 gallons measured to the weld bead near the top of the can.

CARGO PREPARATION AND JOINT INSPECTION

7.6.2.6.2. Item 18b—POP (Plastic). POP Approved Jerrycans are authorized for transporting flammable liquid fuel stocks of vehicles and equipment in quantities. Ensure that all racks are designed to accommodate and secure jerrycans to prevent movement or leakage during airlift. If required, stow these containers in the vehicle or equipment IAW chapter 1 of AFMAN 24-204, TM 38-250, MCO 4030.19F, NAVSUP Pub 505, DLAM 4145.3. Any leakage from these jerrycans will prohibit its acceptance for air shipment. POP-approved jerrycans used to transport hazardous materials may be palletized with its hazardous material inside.

NOTE: There are no minimum fuel requirements for this container. The maximum quantity is 5 gallons. A 2% ullage must be maintained to prevent expansion and leakage when filling this container.

7.6.2.7. Item 19—Dimensions (Fits A/C profile or contour). Ensure equipment will negotiate the aircraft ramps and interior dimensions and will not contact the aircraft sidewalls or ceiling at any time.

7.6.2.8. Item 20—Center of Balance (both sides). Indicate the center of balance to the nearest whole inch.

NOTE: Vehicles that require a combined center of balance are those trailers that must be coupled to their prime movers for flight (See chapter 4 for specific marking instructions.)

7.6.2.9. Item 21—Scale Weight (both sides). Show the gross vehicle weight to the nearest whole pound on both sides of the vehicle (See chapter 4 for specific marking instructions).

7.6.2.10. Item 22—Axle weights (both sides). Mark axle weights above each axle (See chapter 4 for specific marking instructions).

7.6.2.11. Item 23—Tiedown Points (serviceable). Ensure all clevices and tiedown points are serviceable. Include interior and exterior cargo restraint tiedowns in the inspection.

7.6.2.12. Item 24—Pintle Hooks/Clevices:

7.6.2.12.1. Item 24a—Serviceable. Ensure all devices required for loading and offloading trailers and cargo is serviceable.

7.6.2.12.2. Item 24b—Safety Pin Attached (Safety Chain). Ensure all required pins or cotter keys used to lock clasp are properly installed and serviceable.

7.6.2.13. Item 25—Vehicle Equipment Secured (tools, tires, etc.). Ensure all vehicle accessory items are secure. This includes fire extinguishers, seat brackets, and any other loose equipment that may become a projectile during flight.

7.6.2.14. Item 26—Tire Pressure (Maximum 100 PSI). Check to ensure that tires are within manufacturer's specifications. As a guide, tires will be +/- 5 percent per AMCI 24-101 Volume 13.

CARGO PREPARATION AND JOINT INSPECTION

7.6.2.15. Item 27—Shoring (Rolling, Parking, Sleeper, Special, Approach). Check that all required shoring is serviceable and immediately available for use. Ensure shoring is adequate for intended task. Ensure adequate shoring is available to decrease the ramp angle for long or unusual pieces of cargo that are very high or have limited ground clearance. If shoring is required to protect the aircraft parking ramp (tracked vehicles), ensure it is immediately available for use.

7.6.2.16. Item 28—Accompanying Load:

7.6.2.16.1. Item 28a—Within Vehicle Rated Capacity. Do not exceed the rated cross-country capacity of the vehicle. Normally, this information is located on the vehicle data plate or applicable manufacturer's technical publication.

7.6.2.16.2. Item 28b—Secure to Vehicle. Check that all secondary cargo is properly secured to the vehicle and will meet the same restraint criteria required for the vehicle. Use a minimum of ½-inch diameter rope (not nylon) for cargo restraint. 463L aircraft tiedown equipment may also be used. Consider all locally manufactured modifications as secondary cargo.

7.6.2.17. Item 29—LOX/Nitrogen Cart (vent kit). Ensure appropriate cryogenic vent kit materials are with the cart and technicians will be available at load time to install vent. It is the users responsibility for supplying both the vent kit materials and technicians for loading "cryogenic type" cargo.

7.6.3. **Section C**—Pallets/Pallet Trains.

7.6.3.1. Item 30—Clean. Clean each pallet and item of all grime, oil, dirt, etc. Steam clean if necessary. Ensure no soil is transported on or under items loaded on the pallet.

7.6.3.2. Item 31—Scale Weight. As a minimum, ensure pallet scale weight is attached to one 88-inch side and one 108-inch side of the pallet. (See chapter 4 for specific marking instructions).

7.6.3.3. Item 32—Dimensions (Fits A/C Profile or Contour). Check that each pallet does not exceed the dimensions of the planned aircraft position. For example, pallet position number 1 on the C-141B may not exceed 76 inches in height measured from the top surface of the pallet.

7.6.3.4. Item 33—Cargo Properly Secured:

7.6.3.4.1. Item 33a—Netted. Check that all cargo nets are serviceable and properly installed.

7.6.3.4.2. Item 33b—Chained / strapped. When nets are not used or additional restraint is required, check that chains or straps are properly installed. Be sure they provide adequate restraint.

CARGO PREPARATION AND JOINT INSPECTION

7.6.3.5. Item 34—Dunnage (3 pieces per pallet). Ensure proper dunnage, 3 pieces, 4 inches by 4 inches by 88 inches, accompanies each pallet during shipment.

7.6.4. **Section D**—Helicopters (flyaway).

7.6.4.1. Item 35—Fuel Quantity (gallons). Fuel quantities can not exceed ¾ full or 150 gallons per tank, whichever is less.

7.6.4.2. Item 36—Battery (disconnected and taped). Ensure user disconnects and tapes battery terminals and secures the battery to prevent accidental leaks and short circuits.

7.6.4.3. Item 37—Center of Balance (both sides). Ensure user clearly marks the C/B on both sides of the item.

7.6.4.4. Item 38—Scale Weight (both sides). Ensure gross weight is clearly marked on both sides of the item.

7.6.4.5. Item 39—Shoring (Rolling, Parking, Approach). Check that all required shoring is serviceable and immediately available for use. Ensure adequate shoring is available to decrease the ramp angle to keep the helicopter from striking the ground or the aircraft.

7.6.4.6. Item 40—Special Loading Equipment (towbars, etc.). Be sure special equipment necessary to load this cargo is available, (e.g. tools, jacks, pintle hooks, pumps, ramps, towbars, etc).

7.6.4.7. Item 41—Remarks. Explain discrepancies in detail and corrective actions taken.

CARGO PREPARATION AND JOINT INSPECTION

Chapter 7—Homework Assignment

1. All equipment must be properly _____ and _____ before it can be loaded on any aircraft.

2. Secondary Cargo Loading: Secure the cargo with ___-_____ minimum diameter _____ (not nylon) or approved aircraft tiedown equipment.

3. All hazardous materials offered for air shipment must be packaged and handled in strict compliance with _____ _____, ___ _____, ____ _____, _____ ____ ____, _____ _____, Preparing Hazardous Materials for Military Air Shipment.

4. Vehicles loaded on the KC-10 and KC-135 will be limited to ____ tank of fuel.

5. _____ drops or more per minute from a cooling system, crank case, or gear case is a leak. _____ or _____ system leaks, no matter how minor, will prevent air shipment.

CARGO PREPARATION AND JOINT INSPECTION

DEPARTURE AIRFIELD OPERATIONS

chapter
8
AMC

Lesson Objective: The objective of this lesson is for each student to know the roles and responsibilities of the different areas involved in the departure airfield operations process.

References: DOD 4500.9-R Defense Transportation Regulation Part III, Mobility (DTR)

Web Pages:

Learning Activities:

1. Departure Airfield Operations Model
2. Marshaling Area
3. Alert Holding Area
4. Call Forward Area
5. Ready Line/Loading Ramp Area

Test Objectives:

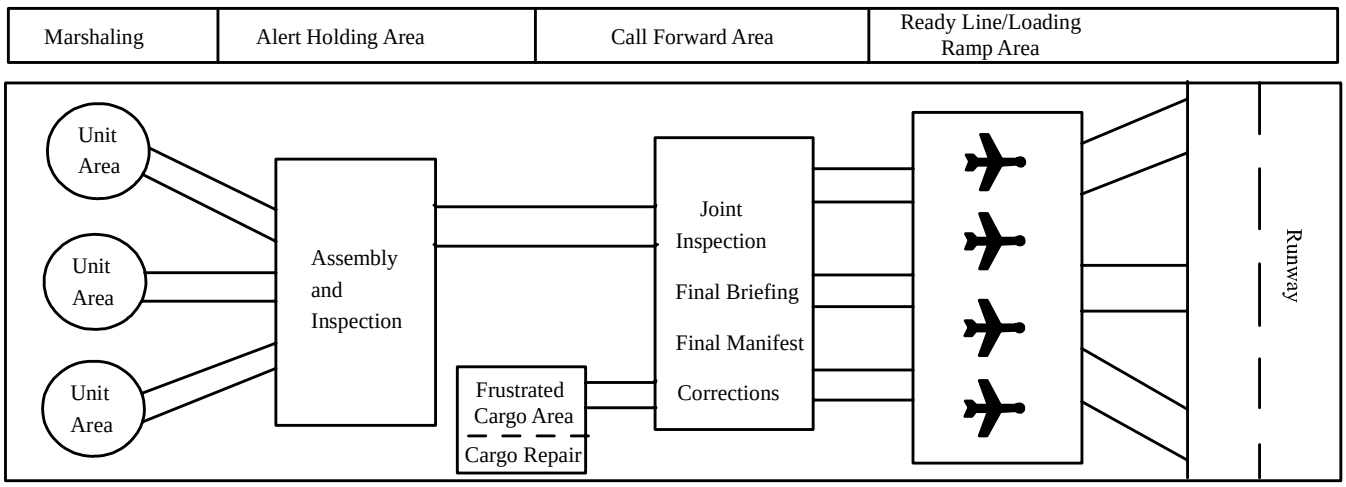
1. Define the marshaling process
2. Outline the different stages of the departure airfield operations process
3. Match the various areas at a departure airfield with their activities

DEPARTURE AIRFIELD OPERATIONS

8.1. General. This section discusses the functional areas of the execution phase of an air movement from the Aerial Port of Embarkation (APOE) to the Aerial Port of Debarkation (APOD). Movement to the APOE will be accomplished in accordance with DOD 4500.9-R Defense Transportation Regulation Part III, Mobility (DTR).

8.2. Departure Airfield Operations. There are four separate areas of activity in Departure Airfield Operations: Marshaling Area, Alert Holding Area, Call Forward Area, and the Ready Line/Loading Ramp Area (see figure 8.1).

Departure Airfield Operations



Control			
Deploying Unit	Departure Airfield Control Goup / Mobility Control Center	Departure Airfield Control Group / Air Mobility Command	Air Mobility Command

Actions			
Initial preparation Documentation: - Cargo - Personnel Personnel readiness Initial assembly Identify: - Cargo Custodian - Troop Commander	Control transferred Final preparation Final documentation: - Cargo - Personnel Final assembly into chalks (loads)	Joint Inspection Frustrated cargo: - Equipment repair - Documentation correction - Re-inspection Holding area: - Further changes prohibited	Control transferred Cargo loading Personnel loading Ramp operations: - Aircraft servicing - Vehicle control - Personnel control - Aircraft parking - Aircrew management Flightline security

Figure 8.1. Departure Airfield Operation Model

DEPARTURE AIRFIELD OPERATIONS

8.3. Marshaling. Marshaling is defined as the orderly assembly, organization, and movement of personnel and equipment, from the unit to the aircraft. This process is an essential portion of the movement. After the planning is complete, all personnel, equipment, and supplies participating in the air movement must be assembled and properly documented for shipment. The marshaling process varies at nearly every location. However, the basic principles for setting up the marshaling process do not change. DOD 4500.9-R Defense Transportation Regulation Part III, Mobility (DTR), establishes the requirements and procedures for the marshaling of cargo. The deploying unit is responsible for activities conducted within the Marshaling Area. In this area the unit prepares for air movement by assembling vehicles, equipment, supplies, and personnel into mission loads (chalks). These loads will be manifested in accordance with Appendix D of DOD 4500.9-R Defense Transportation Regulation Part III, Mobility (DTR), and are sent to the Alert Holding Area upon notification from the DACG or mobility forces. This chapter helps explain the phases of marshaling.

8.3.1. Unit Areas Activities. As early as possible, units should select the equipment and supplies planned for airlift. You are the professional, you know what your mission is and what equipment you need to accomplish that mission. Identifying, prioritizing, and sequencing your equipment is the first step in the marshaling process. After you select the equipment, preliminary preparation for airlift should begin. This includes unit inspection to determine serviceability, cleanliness, and airworthiness. At this point, you should also consolidate your cargo to the maximum extent possible by loading cargo-carrying vehicles with secondary loads. Start all necessary documentation within the Unit Area. You must properly document all air cargo shipments, particularly materials that are hazardous. (see Appendix I of DOD 4500.9-R Defense Transportation Regulation Part III, Mobility (DTR) for more detailed information on the Marshaling Area).

8.4. Alert Holding Area. Once the cargo and equipment is identified, consolidated, prepared, prioritized, and documented, you are ready to transport equipment to an assembly area. This area is designated the Alert Holding Area (AHA). The DACG and/or host installation is responsible for activities conducted within the alert holding area. The deploying unit will check-in with the Alert Holding Area team chief. Deploying units will complete final preparation and assembly of personnel, cargo, and equipment into individual mission loads (chalks). Control of mission loads (chalks) is transferred to the DACG upon completion and acceptance of personnel, cargo, and equipment. Normally, personnel assigned to the Alert Holding Area do not deploy. The DACG will call for movement of personnel, cargo, and equipment from the Alert Holding Area to the Call Forward Area. (see Appendix J of DOD 4500.9-R Defense Transportation Regulation Part III, Mobility (DTR) for more detailed information on the alert holding area).

DEPARTURE AIRFIELD OPERATIONS

8.5. Call Forward Area. The activities conducted within the Call Forward Area are the responsibility of the DACG, host installation, and the mobility force. In this area the joint inspection (JI) is conducted and discrepancies corrected. The inspection is accomplished jointly by members of the deploying unit and the mobility force. This is the final check to be sure all cargo and equipment is properly prepared and documented for safe and efficient air shipment. Improperly prepared equipment will be sent to the Frustrated Cargo Area and will not be released for airlift until all discrepancies are corrected. Any cargo that has been sent to the Frustrated Cargo Area will have to be re-inspected before being accepted for further movement. Incomplete chalks will not be accepted for joint inspection. (see Appendix K of DOD 4500.9-R Defense Transportation Regulation Part III, Mobility (DTR) for more detailed information on the Call Forward Area).

NOTE: Cargo and equipment loads **must** be available for JI **six (6) hours prior** to aircraft departure. Personnel **must** be available for passenger briefings and manifest checks **three (3) hours prior** to departure(reference DOD 4500.9-R Defense Transportation Regulation Part III, Mobility (DTR), page 302-16). Chapter 7 of this publication outlines specific joint inspection criteria and procedures.

8.6. Ready Line and Loading Ramp Area. After passing the final joint inspection criteria, operational control of cargo is again transferred. Now it goes to the agency responsible for supporting airlift operations. This is usually the TALCE. Cargo is then isolated in a separate holding area. This is to ensure that the cargo remains ready for air shipment. **No changes in the cargo configuration are allowed after passing joint inspection.** This isolation requirement is critical. Adding or deleting cargo, fuel, or other items can have a significant effect upon an aircraft's weight and balance and can endanger safety of flight. If changes to the cargo configuration have to be made, the joint inspection must be reaccomplished. (see Appendix L of DOD 4500.9-R Defense Transportation Regulation Part III, Mobility (DTR) for more detailed information on the Ready Line and Loading Ramp Area).

DEPARTURE AIRFIELD OPERATIONS

Chapter 8—Homework Assignment

1. Marshaling is defined as the orderly _____, _____, and _____ of personnel and equipment, from the unit to the aircraft.

2. Identifying, _____, and _____ your equipment is the first step in the marshaling process.

3. After you select the equipment, preliminary preparation for airlift should begin. This includes unit inspection to determine _____, _____ and _____.

4. Improperly prepared equipment will be sent to the _____ _____ _____ and will not be released for _____ until all discrepancies are corrected.

5. Cargo and equipment loads should be available for JI ____ hours prior to aircraft departure. Personnel should be available for passenger briefings and manifest checks _____ hours prior to _____.

DEPARTURE AIRFIELD OPERATIONS

SAFETY

chapter
9
AMC

Lesson Objective: The objective of this lesson is for each student to comprehend all safety methods and procedures when operating around AMC aircraft

References: DOD 4500.9-R Defense Transportation Regulation Part III, Mobility (DTR)
AFI 11-2C-17V3, C-17 Operational Procedures
AFI 11-2C-130V3, C-130 Operational Procedures
AFI 11-2C-141V3, C-141 Operational Procedures
TO-1C-5A-1
1C-130A-9 Cargo Loading Manual
1C-141 B-9 Loading Instructions
1C-5A-9 Loading Instructions
1C-17A-9 Technical Manual Cargo Loading Instructions
1C-10(K)A-9 Cargo Loading Manual
1C-135(K)A-9 Technical Manual Cargo Loading Instructions

Web Pages:

Learning Activities:
1. Flightline safety
2. Vehicle parking rules
3. Loading safety
4. Emergency Vehicles

Test Objectives:
1. Explain the safety aspects associated with loading aircraft and operating Vehicles on the flightline
2. Explain all applicable rules/procedures for parking vehicles on the flightline
3. Describe the different types of hazards associated with working on the flightline
4. Summarize the equipment and requirements of the load team members

SAFETY

9.1. Safety is a very important consideration in any airlift movement. Injury to personnel, damage to equipment or aircraft will impact the overall missions effectiveness. Brief all personnel on the importance of safe practices on the flightline and around aircraft. Always remember the basic doctrine on safety: Expose only the minimum number of personnel to the minimum number of hazards for the minimum amount of time.

9.2. Flightline Safety. The aircraft flightline is a potentially dangerous area of operation. This is particularly true when personnel are not familiar with routine activities and the rules that govern these activities. Listed here are a few of the rules and hazards to be aware of on all flightlines.

9.2.1. Aircraft have the right-of-way over motor vehicles; always yield or move out of the way.

2.2.2. Smoking. Smoking is not permitted on the flightline.

9.2.3. Doors and Ramps. Aircraft petal doors/pressure doors can cause personal injury or equipment damage. Beware of aircraft ramps during opening to prevent injury or damage to equipment.

9.2.4. Noise Hazards. Always wear ear protection. Aircraft engines and power units may very rapidly ruin hearing.

9.2.5. Exhaust Hazards. Engines and power units create a tremendous amount of heat in the normal course of their operation. Be extremely careful when around them.

9.2.6. Propellers and Engine Ingestion Hazards. Propellers pose an obvious hazard. Jet aircraft engines create a vacuum near the intake and can pick up and ingest nearby objects. Restrict your activities when near the front of an operating engine.

9.2.7. User personnel need to be escorted to and from the aircraft due to the large number of hazards. Escorts are usually Air Force personnel or representatives from the A/DACG or MCC.

NOTE: Aircraft, aircraft parking ramps, taxiways, hangers, and runways are controlled areas with restricted access. Unless possessing a valid flight line driving certificate from the installation airfield manager, do not operate motorized vehicles in these areas unless under escort from the TALCE, A/DACG, or Embark personnel.

9.2.8. Observe maximum speed limits. Speeding on the flightline will not be tolerated.

9.2.8.1. Aircraft parking ramp—15 miles per hour

9.2.8.2. Within 25 feet of the aircraft—5 miles per hour

9.2.8.3. Inside the circle of safety/aircraft—Maximum of 3 miles per hour

SAFETY

9.2.9. Never sit or lie down on the parking ramp or under parked vehicles.

9.2.10. Avoid directing headlights at taxiing aircraft at night.

9.3. Circle of Safety (figure 9.1). Vehicles are not allowed within the circle of safety unless they are to be loaded aboard or used to service the aircraft. All vehicles must approach the aircraft so the driver's side is toward the aircraft. Never drive a vehicle under any part of the aircraft or between the wing tips of parked aircraft.

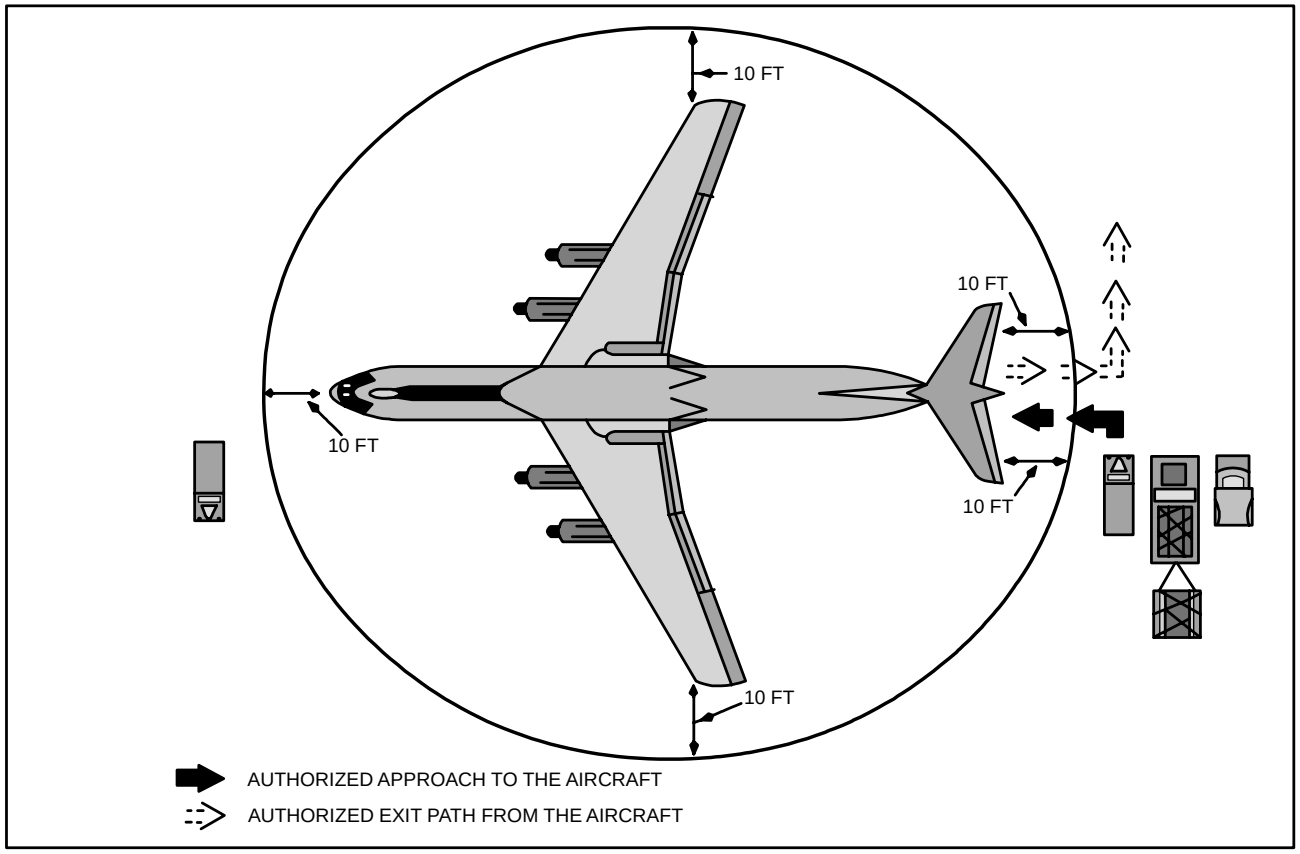


Figure 9.1. Circle of Safety

9.4. Vehicle Parking Rules. Follow these rules when parking a vehicle on the parking ramp.

9.4.1. Park perpendicular to the fuselage outside the circle of safety.

9.4.2. If the vehicle is left unattended:

9.4.2.1. Turn off ignition and leave key in ignition.

9.4.2.2. Put vehicle in lowest gear (standard shift, gasoline-powered), or neutral (diesel-powered vehicles), or "park" (automatic transmissions).

SAFETY

9.4.2.3. Set emergency (parking) brake.

9.4.3. Use parking lights or emergency flashers during the hours of darkness or during inclement weather.

9.5. Loading Safety. Special hazards are present when you are loading or offloading an aircraft. Listed here are some of the rules that apply to loading operations.

9.5.1. Vehicle drivers will not back a vehicle toward or into an aircraft until spotters are in place and directed by a guide. A wheel chock will be pre-positioned on the tarmac to prevent the vehicle from striking the aircraft.

9.5.2. Do not stand or walk in front of or behind vehicles that are being loaded or offloaded.

9.5.3. Only one person will provide directions to the vehicle operator while the vehicle is onloaded or offloaded from the aircraft.

9.5.4. All safety chains, pintle hook pins, electric cables, and brake lines will be installed before towing trailers. Secure the trailer third wheels before on or offloading.

9.5.5. Do not leave vehicles on the cargo floor unattended until a minimum of one forward and one aft restraint device is installed. Only then may the brakes be released or the winch cable removed.

9.5.6. **Members of load team will not wear rings or other jewelery that could create a safety hazard**.

9.5.7. **Load team members will wear gloves.**

9.5.8. No equipment (such as tie-down chains, chocks, etc.) will be thrown about the aircraft.

9.5.9. Only minimum essential personnel will be in the cargo compartment during winching operations.

9.5.10. Do not step on winch cables.

9.5.11. Do not walk across winch cables while winching.

9.5.12. If cargo permits it, passengers should enter the aircraft after any main floor loaded vehicles are uploaded.

9.6. Offload Safety. The following special rules apply to offload operations.

9.6.1. If cargo permits, passengers should exit the aircraft before any main floor loaded vehicles are offloaded.

SAFETY

9.6.2. Do not remove restraint devices or start any vehicle until told to do so by a loadmaster or boom operator.

9.7. Engine Running Onload / Offload (ERO). Safety Considerations:

1. During adverse weather, the vision of all participants may be obscured by the elements. Additional safety measures may be required.
2. Self-propelled vehicles may require winching assistance if positive traction of vehicle wheels cannot be maintained throughout the on or offload operation. Non-skid (Arctic) shoring may be used in lieu of winching.
3. Onload and Offload personnel will be equipped with gloves, steel-toed boots, hearing protection, and goggles (goggles are optional for C-17 operations).
4. During hours of darkness or reduced visibility, reflection vests/belts will be worn.

9.7.1. During ERO's, the following distances must be adhered to for safety considerations.

9.7.1.1. **C-130:** Vehicles and all personnel will proceed directly aft of the aircraft at least **50 feet before turning** and/or **300 feet before stopping.**

9.7.1.2. **C-141:** Vehicles and all personnel exiting via the ramp will proceed directly aft of the aircraft at least **25 feet before turning** and at least **200 feet before stopping.**

9.7.1.3. **C-17:** Vehicles and all personnel exiting via the ramp will proceed directly aft of the aircraft at least **25 feet before turning** and at least **200 feet before stopping.**

9.7.1.4. **C-5:** Vehicles and all personnel exiting via the forward or aft ramp will proceed on a direct line with the fuselage at least **150 feet before turning** and at least **300 feet before stopping.**

9.8. Emergency vehicles.

1. Beware of surroundings
2. Watch for rescue vehicles responding to calls
3. Emergency vehicles always have the right of way when responding to calls
4. Listen for sirens
5. Notify police or aircrew if you notice any unauthorized individuals on flightline

SAFETY

Chapter 9—Homework Assignment

1. _____ is a very important consideration in any airlift movement.

2. _____ is not permitted on the flightline.

3. _____ personnel need to be escorted to and from the aircraft because of the large number of _____.

4. Observe maximum speed limits. Speeding on the flightline will not be tolerated.
   Aircraft parking ramp—_____ miles per hour
   Within 25 feet of the aircraft—_____ miles per hour
   Inside the circle of safety/aircraft—_____ of _____ miles per hour.

5. Vehicles are not allowed within the _____ of _____ unless they are to be loaded aboard or used to service the aircraft.

REFERENCES

A1.1. General. The following references provide guidance for personnel involved in movement of forces in airlift aircraft. It is not necessary to possess all the publications listed in this appendix. These references will provide further guidance for use in planning airlift movement. These references may not be current.

A1.2. Department of Defense (DOD) Publications.
DOD 4500.9-R Defense Transportation Regulation Part III, Mobility (DTR)
DOD 4500.9-R Defense Transportation Regulation Part II, Cargo Movement (DTR)

A1.3. Joint Service Publications:
AFMAN 24-204, TM 38-250, NAVSUPPUB 505, MCO P4030.19F, DLAM 4145.3 (Preparing Hazardous Materials for Military Air Shipments)

A1.4. Air Force Publications:
AFM 2-4, Tactical Air Force Operations—Tactical Airlift (will become AFDD 30)
AFM 11-1, USAF Glossary of Standardized Terms
AFI 10-402, Mobilization Planning
AFI 10-403, Deployment Planning
AFI 11-2C-130 V3 Addenda A, C-130 Operations Configuration Mission Planning
AFI 11-2KC-10 V3 Chpt 25, KC-10 Configuration
AFI 11-2C-17 V3 Addenda A, C-17 Configuration and Mission Planning
AFI 11-2C-5 V3 Addenda A, C-5 Operations Configurations and Mission Planning
AFI 11-2KC-135 V3 Addenda A, C/KC-135 Aircraft Configurations
AFI 11-2C-141 V3 Addenda A, C-141 Operations Configuration/Mission Planning
AMCP 24-2, Civil Reserve Air Fleet Load Planning Guide
T.O. 1C-130A-9, Cargo Loading Manual
T.O. 1C-141B-9, Loading Instructions
T.O. 1C-5A-9, Loading Instructions
T.O. 1C-17A-9, Technical Manual Cargo Loading Instructions
T.O. 1C-10(K)A-9, Cargo Loading Manual
T.O. 1C-135(K)A-9, Technical Manual Cargo Loading Instructions

REFERENCES

ABBREVIATIONS AND ACRONYMS

Abbreviation or Acronym	Definition
AACG	Arrival Airfield Control Group
AB	Air Base
ACC	Air Combat Command
ACL	Allowable Cabin Load
AF	Air Force
AFB	Air Force Base
AFI	Air Force Instruction
AFM	Air Force Manual
AFR	Air Force Regulation
ALCF	Airlift Control Flight
AMC CC	Commander, Air Mobility Command
AMCU	Air Mobility Control Unit
AMS	Air Mobility Squadron
AMC	Air Mobility Command
APOD	Aerial Port of Debarkation
APOE	Aerial Port of Embarkation
AR	Army Regulation
ATOC	Air Terminal Operations Center
BDE	Brigade
CB	Center of Balance
C/B	Center of Balance
CONUS	Continental United States
CRAF	Civil Reserve Air Fleet
DACG	Departure Airfield Control Group
DOD	Department of Defense
DTACC	Deployed Tanker/Airlift Coordination Center
DZCO	Drop Zone Control Officer
D1	Distance One
D2	Distance Two
D3, D4, D5 (etc.)	Distance Three, Distance Four, Distance Five (etc.)
ETIC	Estimated Time in Commission
FM	Field Manual
FMFM	Fleet Marine Force Manual
FS	Fuselage Station
GW	Gross Weight
HHC	Headquarters, Headquarters Company
INF	Infantry
JA/ATT	Joint Airborne/Air Transportability Training
JCS	Joint Chiefs of Staff
K	1000 Pounds
LOGAIR	Logistics Airlift
MCC	Mobility Control Center

ABBREVIATIONS AND ACRONYMS

MCO	Marine Corps Order
MHE	Materials Handling Equipment
MOM	Moment
MSE	Mission Support Element
MST	Mission Support Team
MTMC	Military Traffic Management Command
NAVSUP PUB	Naval Supplement Publication
NCO	Noncommissioned Officer
OPNAV INST	Operational Naval Instruction
OPNAV SUP	Operational Naval Supplement
OPORD	Operations Order
PLF	Pounds per Linear Foot
POP	Performance Oriented Packaging
PSI	Pounds Per Square Inch
RDL	Reference Datum Line
REV	Revised
RL	Reference Line
SAAM	Special Assignment Airlift Mission
TAC	Tactical
TALCE	Tanker Airlift Control Element
TALO	Theater Airlift Liaison Officer
TCN	Transportation Control Number
TCU	Transportation Control Unit
TM	Technical Manual
TMO	Traffic Management Office
UMO	Unit Movement Officer
USTRANSCOM CC	Commander, United States Transportation Command
W1	Weight One
W2	Weight Two
W3, W4, W5	Weight Three, Weight Four, Weight Five

GLOSSARY

Abort—Turn back from an airlift mission before reaching the next scheduled destination, for reasons other than enemy action. This may occur after an aircraft is airborne, or on the ground before takeoff.

Accepted Cargo—Cargo whose packaging and documentation have been verified with respect to shipment information required by applicable DOD regulations, and cargo which is in one of the processing phases necessary to prepare it for onward movement.

Accompanied Baggage—That personal and public property carried or accompanied by a passenger and not documented as cargo.

Aerial Port—

1. An airfield which has been designated for the sustained air movement of traffic and to serve as an authorized port for entrance/departure to/from the country in which located.

2. An Air Force unit that provides special services and functions to include cargo joint inspection, supervision of aircraft loading/downloading, and, in specific circumstances, fleet service.

Aerial Port of Debarkation (APOD)—A station which serves as an authorized port to process and clear aircraft (scheduled, opportune, tactical and ferried) and traffic for entrance to the country in which located.

Aerial Port of Embarkation (APOE)—A station which serves as an authorized port to process and clear aircraft (scheduled, opportune, tactical and ferried) and traffic for departure from the country in which located.

Aerial Port Squadron—An Air Force organization which operates and provides the functions assigned to aerial ports, including the processing personnel and cargo, preparing air cargo and load plans, loading and securing equipment and cargo aboard aircraft, and supervising units engaged in aircraft loading and unloading operations.

Air Assault—The assault air-landing of combat troops, equipment, and supplies into a hostile area by fixed wing transport aircraft for the execution of a tactical or strategic mission.

Air Operations Center (AOC)—The AOC is the focal point for airlift operations at a deployed location. It provides command, control and communications at the intermediate level through the AMC command and control system. The AOC coordinates mission support requirements for airlift aircraft transiting its location and manages all mission support elements supporting the deployed site airlift operation.

Airlift Control Flight (ALCF)—An Air Reserve Component (ARC) unit organized like an active duty Air Mobility Squadron. When deployed, they perform the functions of a TALCE.

GLOSSARY

Air Mobility Squadron (AMS)—An active duty unit composed of a cadre of AMC airlift command and control experts. They provide the core experience and leadership for a TALCE. This designation applies to the 615 AMS, 715 AMS and 815 AMS – Travis AFB, CA. and the 621 AMS, 721 AMS and 821 AMS – McGuire AFB, NJ. When deployed, they perform the functions of a TALCE.

Air Mobility Control Unit (AMCU)—The generic term that describes any unit who when deployed, function as a TALCE.

Airlift Requirement—The total number of passengers or tonnage of cargo or mail forecast to be airlifted to or from an area during a specified period of time.

Air Movement—Air transport of units, personnel, supplies, and equipment, including airdrops and air landings.

Air Movement Plan—Used in detail planning for airlift involving the airlift of troops or equipment. It is prepared jointly by the respective service component commanders.

Air Terminal—A facility on an airfield which functions as an air transportation hub, monitoring the loading and unloading of aircraft and the in-transit processing of passengers and cargo. The airfield may or may not be designated an aerial port.

Air Terminal Operations Center (ATOC)—The air terminal work center which exercises operational control over other terminal work centers. ATOC coordinates activities for loading, unloading, and for fleet servicing aircraft. Manages the port backlog. Coordinates with other agencies concerned with aircraft scheduling and space allocations.

Airborne—

1. Applies to personnel, equipment, etc., transported by air; e.g., airborne infantry.

2. Applies to material being or designed to be transported by aircraft, as distinguished from weapons and equipment installed in and remaining a part of the aircraft.

3. Applies to an aircraft from the instant it becomes entirely supported by the air mass until it ceases to be so supported.

Airborne Operation—An operation involving the movement of combat forces and their logistic support into an objective area by air.

Aircraft Commander—A pilot designated pilot-in-command of a given aircraft who is responsible for its safe operation and in command of all personnel on board.

Airland Operation—An operation involving air movement in which personnel and supplies are delivered to a designated destination.

GLOSSARY

Airlift Command Post—A functional element of an organization responsible for the control of airlift missions. Intent is to provide a means for centralized coordination, planning, communications and control of aircraft movements. It is organized and equipped to gather, analyze, process, and present operational data, as required, to control airlift forces.

Airlift Contract—A contract between the Government and an air carrier to provide transportation for DOD-sponsored traffic.

Airlift Force—Includes military strategic and tactical airlift aircraft augmented and by the Civil Reserve Air Fleet.

Airlift Mission—A mission operated to meet an airlift requirement.

Airlift Operations—The operation of aircraft for the purpose of airlifting passengers, cargo, and mail for the DOD.

Alert Holding Area (AHA)—A traffic control area used to assemble and hold units or portions of units, normally located in the vicinity of the departure airfield. In this area, unit personnel review the preparation of equipment and documentation prior to joint inspection in the call forward area. For Air Force units this is a function of the unit assembly area.

Allowable Cabin Load (ACL)—The amount of cargo and passengers that may be transported by specified aircraft determined by weight, cubic displacement and distance to be flown.

Arrival Airfield Control Group (AACG)—The organization that receives transported units from the Air Force carrier and controls them until released to their parent unit.

Baggage Allowance—The maximum baggage weight, as specified in the travel orders, that a passenger may carry.

Block Time—Time when aircraft brakes are released on initial taxi and that time when the aircraft is parked upon arrival.

Boom Operator—An aircrew member responsible for overall supervision of the onload/offload operation of their assigned aircraft.

Border Clearance—Entry and exit clearances and inspections required to comply with Agriculture, Customs, Immigration, and Immunization directives.

Call Forward Area—The area at the departure airfield where plane loads are assembled in a ready condition prior to movement to the ready line. The joint inspection is conducted in this area. For Air Force units this is a function of the Air Cargo Terminal check-in point and the Air Passenger Terminal Briefing Station.

GLOSSARY

Cargo—All material consigned for shipment including remains of deceased personnel and courier material, except mail, passengers, and patients and their accompanied baggage.

Cargo Configured Aircraft—Aircraft employed principally for transportation of cargo and mail.

Center of Balance (CB)—Point at which the weight of an item is evenly distributed or balanced. Also known as center of gravity (CG).

Chalk—Designated troops, equipment, or cargo which constitute a complete aircraft load.

Chalk Number—The number affixed to an aircraft to identify its sequence for loading; the identification number given to a complete aircraft load and to the transporting carrier.

Channel—Two geographical points between which common user airlift service may be provided on a scheduled basis. A channel does not represent the actual aircraft routing, although the two may be the same. Channels are established by Headquarters United States Air Force.

Channel Traffic—The movement of personnel and cargo over routes established by AMC, using either military or civilian aircraft.

Checked Baggage—Baggage accepted and checked for a flight at passenger processing time. After being checked, baggage normally is not accessible to the passenger during flight.

Civil Reserve Air Fleet (CRAF)—Civil air carriers of United States registry who contractually commit themselves to provide personnel, services, and aircraft to support AMC under stated emergency conditions.

Closure Time—The time at which the last element of a unit arrives at a specific location.

Courier—A member of the armed forces (to include DOD, contract, and other government agencies' personnel) assigned to accompany, assist, protect, or otherwise ensure the security, serviceability, or immediate employment of cargo at the destination station.

Critical Leg—The longest nonstop unrefueled route segment of flight. The fuel required to fly this segment governs the ACL which may be carried over that route.

Departure Airfield Control Group (DACG)—The organization provided by the command which will control the unit to be airlifted from the Marshaling Area until release to the TALCE at the ready line. Upon acceptance by the DACG, all equipment belongs to the DACG commander until it is released to the Air Force. Functions of the DACG are the same for any airlifted service. For Air Force units, the mobility control center (MCC) performs the DACG functions when deploying from an Air Force base or installation.

Departure Air Terminal—An airfield on which troops or materiel are loaded for flight.

GLOSSARY

Departure Time (Commercial)—Commercial schedules reflect this time as gate departure or block out time.

Departure Time (Military)—Published time at which the aircraft is scheduled to become airborne.

Deployment—The relocation of forces to desired areas of operation or a designated location of troops and troop units as indicated in a troop schedule.

Escort—See "courier." Escorts must possess travel orders according to DOD 4515.13R, Air Transportation Eligibility, chapter 3.

Estimated Time of Arrival (ETA)—ETA of an aircraft over a given point or station.

Estimated Time of Departure (ETD)—ETD of an aircraft from a given station.

Estimated Time in Commission (ETIC)—The estimated time when the aircraft, MHE, or vehicle will be ready for use.

463L Dunnage (see "System 463L")—Any material (boards, planks, blocks, etc.) used to support pallets of the Air Force 463L materiel handling system. The minimum recommended size is 4 inches by 4 inches times 88 inches per piece. Three pieces are required to support loaded or stacked 463L pallets.

463L Pallet (see "System 463L")—A flat base (platform) (108 inches by 88 inches) for the purpose of combining cargo, equipment, or a single load item to facilitate the storing, handling, and air transportation of these items with the Air Force 463L Materials Handling System. The 463L pallet is composed of two thin aluminum sheets glued to a soft wood core. An extruded aluminum slotted edge provides the capability to lock the pallet into the aircraft dual rail system.

Frustrated Cargo—Cargo returned to the shipper because of discrepancies in packaging or documentation. These discrepancies must be corrected before the cargo will be accepted for air shipment.

Gross Weight—For palletized cargo, the total weight of the cargo, pallet, and tiedown equipment; for unpalletized cargo, the actual (scale) weight of the cargo.

Ground Time—That period of time the aircraft is on the ground from arrival at the parking spot to takeoff.

Hand Baggage—All baggage carried aboard the aircraft by a passenger, such as cosmetic cases, brief cases, shaving kits, small cartons, boxes or packages.

GLOSSARY

Hazardous Materials—Explosives, flammable liquids and solids, oxidizers, organic peroxides, corrosive material, compressed gases, poisons, irritating material, etiologic agent, radioactive material, and other regulated material as identified in AFMAN 24-204/TM 38-250/NAVSUP PUB 505/MCO P4030.19F/DLAM 4145.3.

High-Line Dock—A loading dock at truck bed loading height equipped with rollers. Normally used to build married pallets.

Home Station Installation—The base, facility, or post to which an individual, group of individuals, or a unit is assigned.

Inter-Theater Shipment—Any shipment which requires conveyance from one theater of operation to another theater of operation by either air, water, or land. Includes those shipments for which a portion of movement requires transshipment through CONUS facilities.

Intra-Theater Shipment—Any shipment which requires conveyance from one location to another location within a theater of operation by either air, water, or land.

Joint Airborne/Air Transportability Training (JA/ATT)—An Air Force funded program designed to provide basic airborne and proficiency/continuation training in a joint environment. Airlift must be integral to mission concept and objectives (see CINCAMC OPORD 17-76).

Joint Airborne Operation—The involvement of two or more services in the air movement and air delivery of combat forces and logistic support into an objective area.

Julian Calendar Date—A day of the year numbered consecutively from 1 January through 31 December, inclusive.

Load—A grouping of vehicles, equipment, and/or passengers to be loaded into a specific aircraft.

Load Plan—All of the individually prepared documents which present in detail all instructions for the arrangement of personnel and equipment aboard a given transporting carrier moving by highway, water, rail, or air transportation.

Loading Time—A specified time, established jointly by the airlift and deploying commanders concerned, when aircraft are available for loading and loading is to begin.

Load Manifest—A document specifying in detail the payload expressed in terms of passengers or freight carried in one aircraft for a specific destination.

Loadmaster—An aircrew member responsible for overall supervision of the onload/offload operation of their assigned aircraft.

GLOSSARY

Load Spreader Shoring—Material used to distribute the weight of a load over a given floor area to avoid exceeding designed aircraft stress limitations.

Load Team—A team of individuals selected from members of the deploying unit, DACG/ AACG and TALCE to provide aircraft loading/offloading support.

Load Team Chief—The senior Air Force individual (usually a TALCE representative) assigned to the load team.

Married 463L Pallets—The joining of 2, 3, 4, or 5 463L pallets by mechanical locks or other devices so that all pallets move as one unit. Pallets are joined in order to transport oversize items of equipment. May also be referred to as pallet trains.

Marshaling—The process of assembling, holding, and organizing supplies and/or equipment, especially vehicles of transportation, for onward movement.

Marshaling Area—The general area in which units are located and from which an air movement is initiated. For Air Force units this is normally known as the unit assembly area.

Materials Handling Equipment (MHE)—Mechanical devices for handling of supplies with greater ease and economy. Examples: forklift, roller conveyor, 60k, 40K, 25K, and 10K 463L loaders.

Mission Support Element (MSE)—A mission support element (MSE) is a group of people performing specific functions required to support airlift operations. Examples of MSEs are maintenance, aerial port, security police, weather, intelligence, and flying safety. These MSEs may be deployed to support TALCEs or existing AMC operations throughout the world. When deployed with a TALCE, the MSE is under the direct command of the TALCE commander. When deployed as augmentation forces, the MSE is under the command of the supported unit commander.

Mission Support Team (MST)—A mission support team (MST) consists of mission support elements (MSEs) commanded by an enlisted TALCE cadre member/TALCE cadre augmentee, certified as MST qualified. A MST is deployed to locations where AMC command and control and mission support is required but nonexistent. A MST will not have a TALCE Operations Center; however, as an extension of AMC command and control, and MST will provide minimum command and control reporting consistent with mission requirements.

Military Traffic Management Command (MTMC)—The single manager operating agency for military traffic land transportation and common use ocean terminals. Serves as clearance authority for traffic entering the defense transportation system.

Mobility Control Center (MCC)—An agency responsible for designating mode and/or providing transportation routing instructions. The Air Force unit equivalent of a DACG.

GLOSSARY

Outsize Cargo—All cargo which due to its physical characteristics exceeds the capabilities (too large or too heavy) of the KC-135, C-130, C-141B, or KC-10 aircraft and requires a C-5 or C-17 aircraft for air movement.

Oversize Cargo—Any cargo that is larger than the working surface of the 463L pallet.

Parent Organization (Unit)—An organization (unit) responsible for furnishing all or a portion of the common support requirements of another organization or unit.

Payload—That combined weight of passengers, baggage, mail, and cargo carried on an airlift mission.

Pusher Vehicle—Any self-propelled vehicle, such as a 1 l/4-ton or 2 l/2-ton truck, with a front mounted pintle hook. This vehicle is used primarily to push disabled vehicles, trailers, howitzers, etc., aboard aircraft. This vehicle may also provide load team transportation and is normally assigned one per load team.

Ready Line—The final point in the marshaling area where the load is positioned prior to loading. The point where AMC accepts the load from the user. For Air Force units this is a function of the air cargo terminal marshaling area and the air passenger terminal holding station.

Seats Available—The total passenger seats available for each manifest destination.

Senior Lodger—A CRAF carrier selected by AMC to coordinate all CRAF functions at a designated dispersal, regroup, APOE, or en route station. The senior lodger is the central point of contact between carrier personnel at the airfield and the CRAF Airlift Schedule Center.

Single Manager for Airlift Service—The Secretary of the Air Force is designated as the single manager for airlift services with authorities and responsibilities in DOD Directive 5160.2, Single Manager Assignment for Airlift Service. The Commander, Air Mobility Command, is designated as the Executive Director of the Single Manager Operating Agency for Airlift Service with authorities and responsibilities for managing the agency.

Special Assignment Airlift Mission (SAAM)—A mission operated by AMC at the request of the Departments of the Army, Navy, and Air Force, Marine Corps, and/or other DOD agencies.

Strategic Airlift—The continuous or sustained movement of units, personnel, and material in support of all Department of Defense agencies between area commands; between the continental United States (CONUS) and overseas within an area of command, when directed. Strategic airlift resources possess the capability to airland or airdrop troops, supplies, and equipment for augmentation of tactical forces when required.

GLOSSARY

System, 463L—A standardized materials handling system compatible with AMC organic airlift aircraft used to support air logistics and the aerial delivery mission. Included in the system are the aircraft which have the dual rail system installed, materials handling equipment (MHE) such as K-Loaders, forklifts, and the 463L pallet and net package.

Tactical Airlift—Airlift which provides the immediate and responsive air movement and delivery of combat troops and supplies directly into objective areas through airland, extraction, airdrop, and other air delivery techniques; and the air logistics support of all theater forces, including those engaged in combat operations, to meet specific theater objectives and requirements.

Theater Airlift Liaison Officer (TALO)—A rated airlift crew member assigned to US Army combat units to advise the ground commander on the use of airlift resources. Additionally, TALOs coordinate airlift missions with the theater Deployed Tanker/Airlift Coordination Center (DTACC) and may perform Drop Zone Control Officer (DZCO) duties.

Tanker/Airlift Control Element (TALCE)—TALCE describes a composite organization deployed to any location where AMC command and control and mission support is required but nonexistent. A TALCE is commanded by a rated officer, certified as a TALCE commander. A TALCE has an operations center that serves as the focal point for deployed command, control and communications. A TALCE may include additional mission support elements (MSE), as required. These MSEs are under the direct command of the TALCE commander and are organizationally subordinate to the TALCE Air Operations Center. TALCEs are capable of conducting operations from either established facilities, including airports of both foreign and domestic governments, or from remote/austere locations. TALCEs provide minimum essential en route/turnaround support for onload/offload operations and, where required, safety-of-flight maintenance and aircraft servicing.

Transportation Movement Office (TMO)—The base level office responsible for surface transportation of people, household goods, baggage, cargo, and mail.

Troop Commander—Designated officer or noncommissioned officer responsible for maintaining control and discipline of all passengers/troops assigned to a specific aircraft mission.

Unauthorized Baggage—Baggage weight above the authorized baggage weight allowance on the travel orders, further, those items specifically prohibited by law.

Unit Loading—The loading of troop units with their equipment and supplies in the same ship, aircraft, or land vehicles.

Zero Fuel Weight—The actual weight of an aircraft including aircraft operational equipment, passengers, baggage, mail, and cargo, but not including fuel.

GLOSSARY

AMCU ADDRESS/TELEPHONE LISTING

HQ AMC/DOOM, DSN 779-4362 (Fax –4627)
402 Scott Dr. Unit 3A1
Scott AFB IL 62225-5302
URL: https://amc.scott.af.mil/do/doo/doom/doom.htm

AMWC/WCOT, DSN 650-7510 (Fax –7500)
5656 Texas Ave.
Fort Dix, NJ 08640

ACTIVE DUTY UNITS

615 AMOG—DSN 837-1017/4500
575 Waldron St.
Bldg. 241, Bay F-1
Travis AFB, CA 94535-2150

615 AMS—DSN 837-7485/3088
640 E. St.
Bldg. P-1
Travis AFB, CA 94535

715 AMS—DSN 837-7602/1596
575 Waldron St.
Bldg. 241, Bay A-2
Travis AFB, CA 94535-2438

815 AMS—DSN 837-7365/3091
575 Waldron St.
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Travis AFB, CA 94535

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1748 Vandenberg Rd.
McGuire AFB, NJ 08641-5000

621 AMS—DSN 650-5092/3404
1907 East Arnold
McGuire AFB, NJ 08641-5000

721 AMS—DSN 650-5092/2171
2304 Tuskegee Airmen Blvd
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4 AF/DOTT—DSN 947-7734
895 Baucom Ave. S.E.
March ARB, CA 92518-2266

349 ALCF—DSN 837-2895
210 Goodall
Travis AFB, CA 94535-2909

433 ALCF—DSN 969-5008/5018
880 Westover Rd.
Kelly AFB, TX 78241-5568

446 ALCF—DSN 382-8655/5566
1205 12th Street NE
McChord AFB, WA 98438-1326

452 ALCF—DSN 947-5102/5109
5125 Tanker Way, Suite 9
March ARB, CA 92518-1722

22AF/DOTA—DSN 925-4759/5780
1364 Chennault Circle
Dobbins ARB, GA 30069-4904

94 ALCF—DSN 925-4488/5117
1430 First St., Room 1280
Dobbins ARB, GA 30069-5000

302 ALCF—DSN 834-6102/7780
860 Mitchell ST. #104
Peterson AFB, CO 80914-5000

315 ALCF—DSN 673-5369
104 E. Stuart Ave., Bldg. 551
Charleston AFB, SC 29404-4908

439 ALCF—DSN 589-2051
650 Hangar Ave. South Wg., Suite 225
Westover ARB, MA 01022-1731

440 ALCF—DSN 950-5100
300 E. College Ave., Bldg. 113
Gen. Mitchell IAP ARS, WI 53207-6299

459 ALCF—DSN 857-2298/6163
3766 Patrick Ave.
Andrews AFB, MD 20762-4814

512 ALCF—DSN 445-6145
202 Liberty Way
Dover AFB, DE 19902-5202

514 ALCF—DSN 650-8505/2727
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NGB/XOO—DSN 225-1480
Washington, DC 20310-2500

118 ALCF —DSN 446-6410
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Nashville, TN 37217-2538

123 ALCF —DSN 989-4444
1101 Grade Lane
Louisville, KY 40213-2678

133 ALCF —DSN 738-2290/2291
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St. Paul, MN 55111-4122

ANG/DOOS—DSN 327-2936/2940
1411 Jefferson Davis Hwy
Arlington, VA 20222-3231

136 ALCF —DSN 874-3348
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137 ALCF —DSN 940-5315/5309
5624 Air Guard Dr.
Oklahoma City, OK 73179-1009

146 ALCF—DSN 893-7602
106 Mulcahey Dr.
Port Hueneme, CA 93041-4001

172 ALCF—DSN 731-9542
141 Military Dr.
Jackson, MS 39232-8870

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Strategic Deployability School (S.D.S.)
6559, 58th Street, Rm. 209
Ft. Campbell, KY 42223-1294
DSN 635-5710/3182

Joint Strategic Deployment Training Center
Attn: ATSP-TDJ
US Army Transportation School
Bldg. 1028 Rm. B
Ft. Eustis, VA 23602-5363
DSN 927-2255

EWTGPAC/N92
Log Branch
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NAB Coronado
San Diego, CA 92155-5034
DSN 557-3452/3213

G-3, 82d Airborne Division
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Ft. Bragg, NC 28307-5100
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Computer Aided Load Manifesting (CALM)
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Comm: (334) 416-2500

Automated Air Load Planning System (AALPS)
POC: Mr. Ken Whiteside (class slots)
1-877-462-2577
Program Manager: Mr. Major J. Blake
Comm: (804) 765-0828

Civil Reserve Air Fleet
POC: Mr. Ronald VanHorn
e-mail: ronald.vanhorn@scott.af.mil
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Comm: (618) 256-1751

Hazardous Cargo
POC: Mr. Del Hamilton
e-mail: delbert.Hamilton@scott.af.mil
DSN: 779-2543
Comm: (618) 256-2543

STUDENT REQUEST FOR ASSISTANCE

1. NAME AND RANK:

UNIT OF ASSIGNMENT:

POST OR BASE:

TELEPHONE NUMBER, DSN:

2. CONTROL NUMBER AND PLACE OF AFFILIATION TRAINING CLASS:

3. EXPLAIN IN AS MUCH DETAIL AS POSSIBLE THE TYPE OF ASSISTANCE YOU ARE REQUESTING. USE ADDITIONAL SHEETS AS NECESSARY.

4. MAIL TO YOUR AFFILIATED AIR MOBILITY CONTROL UNIT.

STUDENT REQUEST FOR ASSISTANCE